DETERMINANTS OF FIRM PERFORMANCE

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DEDICATED

TO

Dr. K.N. Ramanujam

(My Guide)

MY PARENTS

AND

MY WIFE

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CERTIFICATE

This is certify that this thesis entitled **"DETERMINANTS OF FIRM PERFORMANCE" submitted by Dr. M. SELVAM,** Professor and Head, Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli – 620 024 for the award of the degree of Doctor of Letters (D.Litt) to Bharathiar University, Coimbatore – 641046, India, is based on the results carried out by him and his co workers at Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

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DECLARATION

I, **Dr. M. SELVAM**, hereby declare that the thesis entitled, **"DETERMINANTS OF FIRM PERFORMANCE",** submitted to the Bharathiar University, in partial fulfillment of the requirements for the award of Degree of **Doctor of Letters (D.Litt) in Management (Interdisciplinary in Commerce)** is a record of original and independent post-doctoral research work done by me during 2016-2017 and it has not formed the basis for the award of any Degree such as Master's degree or Ph.D. degree, Diploma, Associateship, Fellowship or other similar title to any candidate of any University.

Date: **Signature of the Candidate**

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Professor M. Selvam

ABBREVIATIONS

A	-	Articles Published by the Candidate
AAR	-	Average Accounting Returns
ADF	-	Augmented Dickey Fuller Test
AF	-	Affective
AMOS	-	Analysis of Moment Structure
ANOVA	-	Analysis of Variance
ARR	-	Accounting Rate of Returns
ASRV	-	Average Security Returns Varaibility
AT	-	Attitudinal
AVE	-	Average Variance Explained
B	-	Books Published by the Candidate
BH	-	Behavioural
BSE	-	Bombay Stock Exchange
CB	-	Complaining Behaviour
CC	-	Commitment
CEO	-	Chief Executive Officer
CFA	-	Confirmatory Factor Analysis
CFI	-	Comparative Fit Indices
CG	-	Cognitive
CN	-	Conative
CNX	-	Credit Rating Information Services of India Limited **(CRISIL)** and the National Stock Exchange of India (**NSE**)
CO_2	-	Carbon Dioxide
CR	-	Construct Reliability
CRISIL	-	Credit Rating Information Services of India Limited
D.Litt	-	Doctor of Letters
EDS	-	Electronic Data System

EESS	-	Expected Event surrounding the stock and the book value
EFA	-	Exploratory Factor Analysis
EI	-	Energy Intensity
EKC	-	Environmental Kuznets Curve
EMH	-	Efficient Market Hypotheses
EP	-	Environmental Performance
et al.	-	and others
FC	-	Financial Characteristics
GARCH	-	Generalized Autoregressive Conditional Heteroskedasticity
GDP	-	Gross Domestic Product
IO	-	Investors' Optimism
IP	-	Investors' Participation
IPO's	-	Initial Public Offering
IS	-	Investor Sentiments
ISMO	-	Investor Stock Market Outlook
IT	-	Information Technology
M&A	-	Merger & Acquisition
MD	-	Managing Director
NH	-	Null Hypotheses
NSE	-	National Stock Exchange of India Ltd.,
PCF	-	Price to Cash Flow
PCR	-	Price Cut-off Rules
PERFPS	-	Price Earnings Ratio and Familiarity with the Products and Service
PF	-	Psychological Factors
PLS-PM	-	Partial Least Square Path Modeling
PPPSA	-	Past Price Performance and Sector Attractiveness
PPSA	-	Personal Property Securities Act

Pre	-	Previous
Prob	-	Probability
PT	-	Price Tolerance
PTC	-	Pallavan Transport Corporation Limited
QM	-	Quality of Management
RFC	-	Recommendation of Financial Community
ROA	-	Return on Assets
ROCE	-	Return on Capital Employed
ROE	-	Return on Equity
ROS	-	Return on Sales
S&P	-	Standard and Poor's
SEBI	-	Securities Exchange Board of India
SENSEX	-	Sensitivity Index
SL	-	Service Loyalty
SPSS	-	Statistical Package for Social Science
SRV	-	Security Returns Variability
SSF	-	Stock Specific Factors
Stat	-	Statistics
STD	-	Standard
STU	-	State Transport Undertaking
TR	-	Trust
WEB	-	Who Else Buy
WOM / WM	-	Word of Mouth

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1.0. Determinants of Firm Performance: A Subjective Model

An attempt has been made in this study, to discuss the subject model, in respect of the determinants of firm performance. This Chapter is organized into three sections. **Section-A** focuses on the conceptual framework of firm performance;**Section-B**explains the multidimensional models for firm performance; **Section-C** covers methodology part of the study.

1.1. SECTION A: Introduction

Strategic Management can be seen as a systematic process, which aims at maximizing the utilization of resources, in relation to organizational objectives, which are in conformity with the demands of the business environment (**Selvam, 2016$_c$[B13]**). It is worth noting at this juncture that the strategic management looks beyond the mere day-to-day operations of the business and it is long term in nature. Hence it aims at creating the future, without neglecting the present, thereby providing an appropriate platform for reacting to changes in business environment (**Selvam, et al., 2016[A41]**).

Strategic Management is an applied field of business and as such, its survival and growth depend not only on its theoretical sophistication and the rigour of its methods but also on its relevance to practitioners (**Selvam, 2016$_c$[B14]**).Earlier studies show that the firms that are sophisticated users of strategic management, are more successful than firms that have not yet acquired strategy-making skills (**Pekar and Abraham,1995**). The practitioners often do not perceive strategy-making as relevant to improving their firm performance (**Heracleousand DeVoge, 1998**). Besides, **Edenand Ackermann (1998)** proposed that the strategy-making process may be the most important factor,that determines the ability of a firm, to 1ealize its strategic intent. Besides, the strategy-making process that a firm uses may have a profound impact on the firm performance (**Hart and Banbury, 1994)**. In other words, the firm performance is a relevant construct in strategic management research.

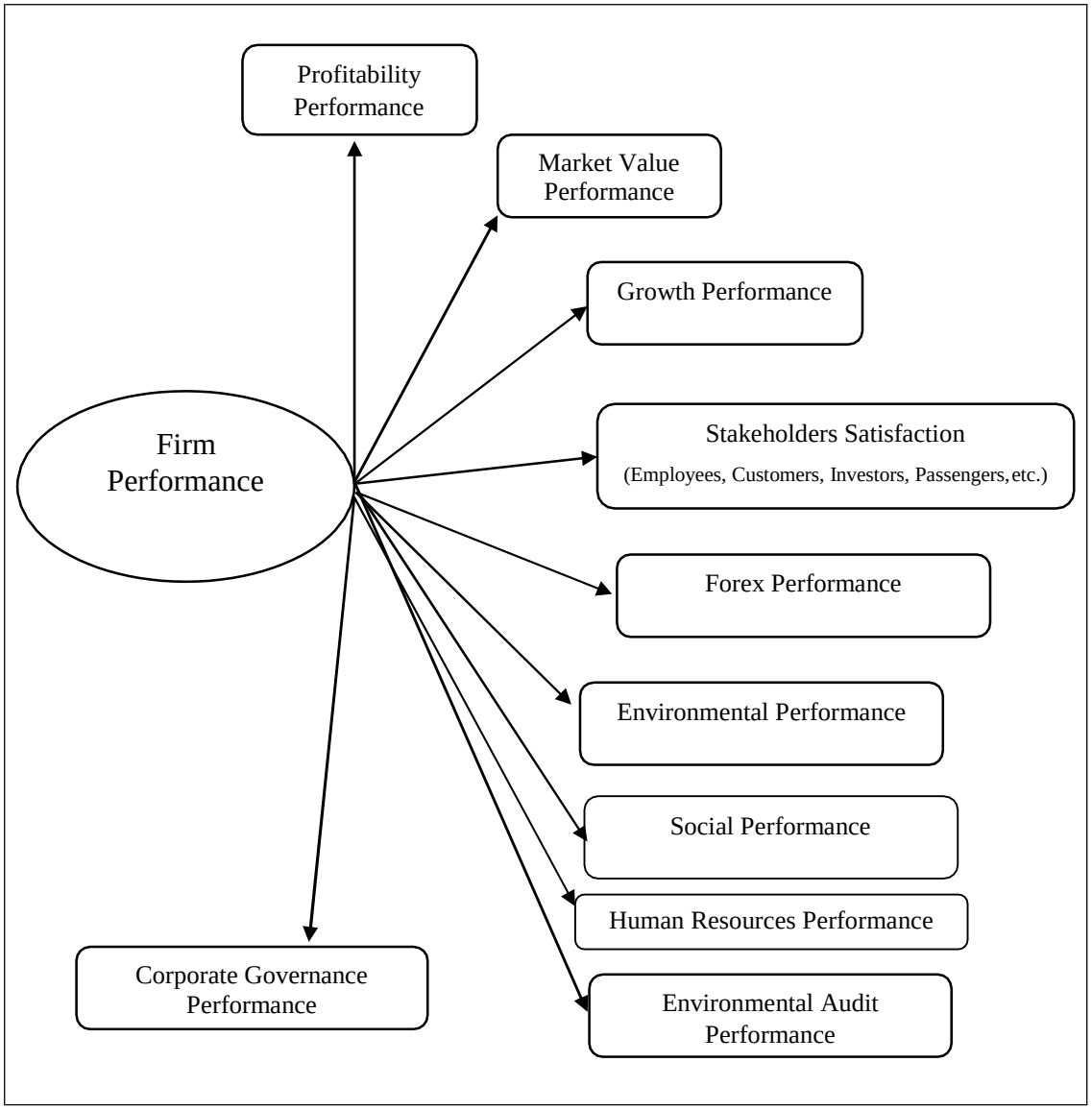
The rigorous construct measurement is critical for the advancement of science, particularly when the variables of interest are complex or not observable.

Strategic Management has been criticized, for not giving the topic of firm's performance, high priority (**Boyd, et al., 2005;Selvam 2016$_b$** [B13]). But it is now accepted that the firm performance is one of the most relevant constructs in the field of strategic management (**Rumelt et al., 1994**). A construct, to measure firm's performance, may have to be developed in such a way to be commonly used as the final dependent variable (**Richard, et al., 2009**). Despite its relevance, the research on the firm performance, suffers from problems such as lack of consensus, selection of indicators based on convenience and little consideration of its dimensionality (**Combs, et al., 2005; Crook, et al., 2008; Richard, et al., 2009).** Many earlier studies measured the firm performance with a single indicator**(Glick,et al., 2005; Selvam (2016$_c$**[B14]**).** Since several dimensions do exist, a researcher would have to choose all the dimensions most relevant to the research and judge the outcomes of this choice **(Richard, et al., 2009).** As such, the field of strategic management needs a clearer conceptualization of firm performance and discussions about its dimensions and better measurement efforts. To make a contribution to these issues, this Chapter proposes multidimensional measurement, a subjective model for firm performance.

1.2. SECTION B: Multidimensional Models for Firm Performance

As mentioned earlier, the present study focused only on firm performance. A comprehensive construct (model), on firm's performance, can be unidimensional or multidimensional. **Figure-1.1**displays the list of identified determinants, i.e., possible representations of firm's performance. It is to be noted that the identified determinants for firm performance are profitability performance, growth performance, market value performance, customers' satisfaction, employees' satisfaction, environmental performance, environmental audit performance, corporate governance performance and social performance. As pointed out earlier, these determinants were identified, based on the reviews published earlier by **Selvam., 2016$_a$**[B12]**; Selvam, et al., 2016**[A41]**; Selvam., 2016**[B13] and others.

Figure – 1.1
List of Identified Determinants for Firm Performance



SOURCE: Developedfrom various related studies, including **Selvam (2016$_a$) [B12] and Selvam, et al., (2016) [A41].**

Profitability performance is the ability of a business to earn profit. Profit is what remains in the revenue a business generates, after it pays all expenses, directly related to the generation of the revenue, such as producing a product and other expenses related to the conduct of the business activities. The objective of the firm is to maximize the wealth of existing shareholders **(Vanitha and Selvam, 2012**). Superior financial performance is a way to satisfy investors (**Chakravarthy, 1986**) and it can be represented by profitability, growth and market value (**Venkatramanand Ramanujam, 1986; Cho and Pucik, 2005**). These three aspects of profitability, growth and market value, complement each other. **Profitability** measures a firm's past ability to generate returns (**Glick, et al., 2005**).

Stock markets play a crucial role in the growth of global economies **(Lingaraja, et al., 2015$_a$[A34])**. The changes in the economy are directly reflected in the capital market **(Raja et al., 2009$_a$[A12]).** The Indian firms mainly raise funds through capital markets **(Selvam et al., 2004**[A2]). A capital market, in which stock prices fully reflect all available information, can be termed efficient **(Selvam, 2008**[A11]). Market value performance refers to the price in the market. The financial asset, like the share of a company, should fetch value in the marketplace. Market value is also commonly used to refer to the market capitalization of a publicly-traded company and it is obtained by multiplying the number of its outstanding shares by the current share price.**Market Value** represents the external assessment and expectation of firms' future performance. It should have a correlation with historical profitability and growth levels but also incorporate future expectations of market changes and competitive moves. The diversification strategy provides effective risk minimization and return maximization **(Lingaraja, et al., 2015$_b$[A35])**.

Investors generally prefer to earn excess return than to incur risk. There is no secret formula which may direct the investors to earn excess return **(Lingaraja, et al., 2015$_c$[A36]).** It is notpossible to make successful investment decisions at all time **(Bennet et al., 2011$_b$[A21]). Market anomalies** help the investors to gain from market movements. Maximization of stakeholder and investors value,through better performance of business operation,are revealed on the stock market by the indices of financial report and other required information on the stock market (**Tsay and Goo, 2006**). The studies on weak form efficiency and semi-strong form efficiency reveal the share price performance.

Growth performance of the firm refers to a positive change in size, and/or maturation, often over a period of time. Growth normally occurs as a stage of maturation or a process toward fullness or fulfillment. The growth demonstrates a firm's past ability to increase its size (**Whetten, 1987**). The increase in the size, even at the same profitability level, will increase its absolute profit and cash generation. Larger size also can bring economies of scale and market power, leading to enhanced future profitability. **Ramkumar et al., (2015**[A40]**)**pointed out that thedevelopment of financial markets has significant impact on economic growth. The stock indices,

apart from being an indicator of the market movements, serve as a benchmark for measuring the performance of stocks under that index (**Selvam, et al., 2012)**.

Employee Satisfaction refers to employees' satisfaction with their roles and responsibilities, the work environment, and their experiences with management. It is necessary to find out what mix of benefits matters most to them and what skills they wish to acquire as they develop their careers. Employees' satisfaction is related to investments in human resources practices. The employees are the group which tends to value clearly defined job descriptions, investment in training, career plans and good bonus policies **(Harter, et al., 2002).** The satisfaction of these stakeholders, according to **Chakravarthy (1986),** translates itself into a firm's ability to attract and retain employees and lower turnover rates.

Customer Satisfaction is a measure of how products and services, supplied by a company, meet or surpass customer expectation. It is seen as a key performance indicator within business. Customer satisfaction provides a leading indicator of consumer purchase intentions and loyalty.

Selvam (2016$_{a}^{B12}$) stressed that the **service efficiency** (Customer Satisfaction) of corporates need to be evaluated from the view point of passengers (Customer), operators, bus crew/managers, government, public or personal observation. **Customer and employee satisfaction** are two further aspects to be considered in all contexts. Customers generally want companies to provide them with goods and services with great expectations **(Fornell, et al., 1996)**. The customer is the focus point to improve the business (**Selvam, 2005^{A3}**). Companies must understand their needs, avoid defects and improve the perceived quality and value added by their offerings. Customer satisfaction increases the willingness-to-pay and thus the value created by a company (**Barney and Clark, 2007). Environmental performance** indicators act as analytical tools to compare various plants in a firm, or various firms in an industry, with each other and with respect to certain environmental characteristics.

Indirect stakeholders, like **governments and communities(public)**, are affected by a number of firms' actions, especially social and environmental ones. Social and environmental performance can be considered as the way to satisfy

communities **(Chakravarthy, 1986)** and governments **(Waddock and Graves, 1997$_a$).** All over the world, deterioration of environmental quality has been considered a hot issue. The growing number of industries is one of the major reasons, for the enhanced level of pollution and fast degradation of environmental resources **(Vasanth, et al., 2015$_a$[A37]).** The organizational structures need to be changed, to suit the customers' need. Some activities, associated with the satisfaction of these groups, are safe environmental practices, increased product quality and safety, ethical advertising, minority employment and development of social projects **(Waddock and Graves, 1997$_a$; Waddock and Graves, 1997$_b$; Agle,et al., 1999; Johnson and Greening, 1999).** Therefore, the conceptualization of firm performance is based on satisfying the **STAKEHOLDERS**. Environment-related information helps to take both internal and external decision making of the organization **(Vasanth, et al., 2012[A26])**.According to **Vasanth, et al., (2015$_c$[A39]),** it is essential that when the company earns more profit from the operation of the business, it should spend a portion of the revenue towards environmental protection. Environmental audit is one among the comprehensive approaches to an environmental management system of a firm because it helps to reduce the impact of their activities on the environment. **Social performance** is defined as the effective **translation** of an institution's mission into practice, in line with accepted social values. In other words, social performance is about making an organization's social mission, a reality. In order to achieve strong social performance, an organization must manage its social performance, as carefully and deliberately, as it manages its financial performance.

The success of any business firm mainly dependsupon good and effective corporate governance **(Karpagam and Selvam, 2014[B10]).Corporate Governance** is the system by which companies are properly directed and effectively controlled **(Karpagam and Selvam, 2014[A33]; Karpagam and Selvam, 2014[B10]).**Corporate Governance signifies a set of codes and guidelines to be followed by the corporate enterprises (**Oli and Selvam, 2015[B11]).Shleifer and Vishny (1997)** define **Corporate Governance** as "the ways in which, suppliers of finance to corporations, assure themselves of getting a return on their investment". **Yermack (1996)** indicated that smaller boards could lead to higher market values. The World Bank in 1999, stated that corporate governance comprises two mechanisms, internal and

external corporate governance. Internal corporate governance, giving priority to shareholders' interest, operates on the board of directors to monitor top management. On the other hand, external corporate governance, monitors and controls manager's behavior, by means of external regulations and force, in which many parties are involved, such as suppliers, debtors, accountants, lawyers, credit ratings agencies and investment bank. In short, firm's performance is affected by corporate governance mechanism in India **(Karpagam and Selvam, 2014[A33]).**

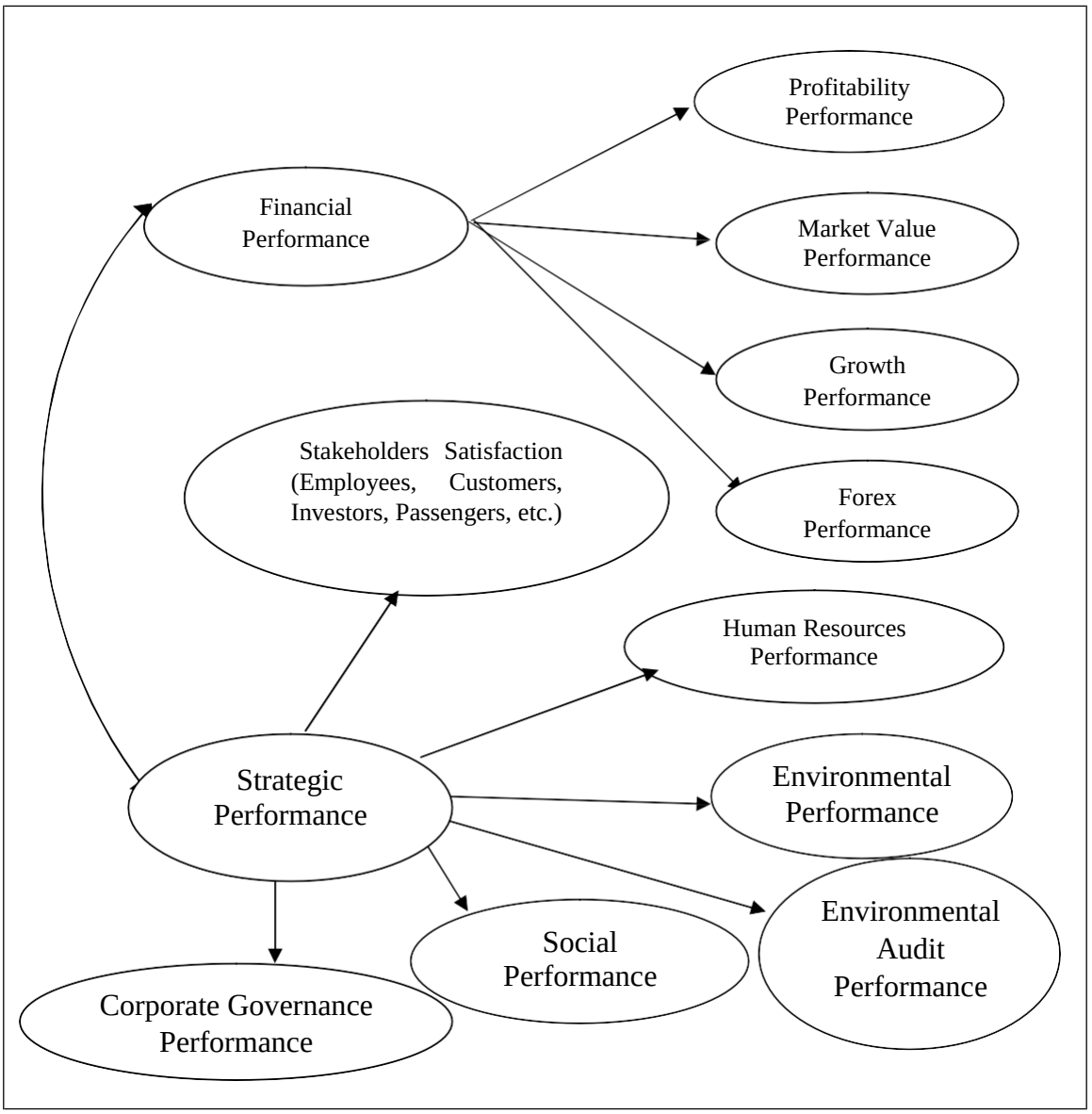
The grouping of determinants (Dimensions), for firm performance, is given in **Figure-1.2.** It is clear that all the nine factors are grouped into two - Financial Performance and Strategic Performance. The financial performance covers three variables, namely, i) profitability performance, ii) growth performance and iii)market value performance while strategic performance includes six other variables such as i)employee satisfaction, ii)customers' satisfaction, iii) environmental performance, iv)environmental audit performance, v)corporate governance performance and vi)social performance. Besides, each dimension symbolizes one facet of the overall result of the company, and it is represented by a particular group of indicators.

1.2.1. Conclusions for the Subjective Model

Despite its relevance to strategic management, the firm performance suffers from limited conceptualization, selection of indicators based on convenience and no proper consideration of its dimensionality**(Selvam et al., 2016[A41]).**

This study makes a contribution to the joint efforts of finding proper conceptualizations of performance and related measurements. It is true that a comprehensive set of performance data is not available but these subjective measures can throw more light on the limited objective data **(Ketokivi & Schroeder, 2004).** What is expected is that the selection of dimensions should carefully evaluate the most likely affected dimensions, as suggested by **Ray et al., (2004).** The Scale can also be developed for a model for future expansion and for refining the model periodically, with additional dimensions and indicators.

Figure – 1.2
Grouping of Determinants for Firm Performance



SOURCE: Developedfrom various related studies, including **Selvam (2016$_{a}^{B12}$)and Selvam, et al., (2016^{A41}).**

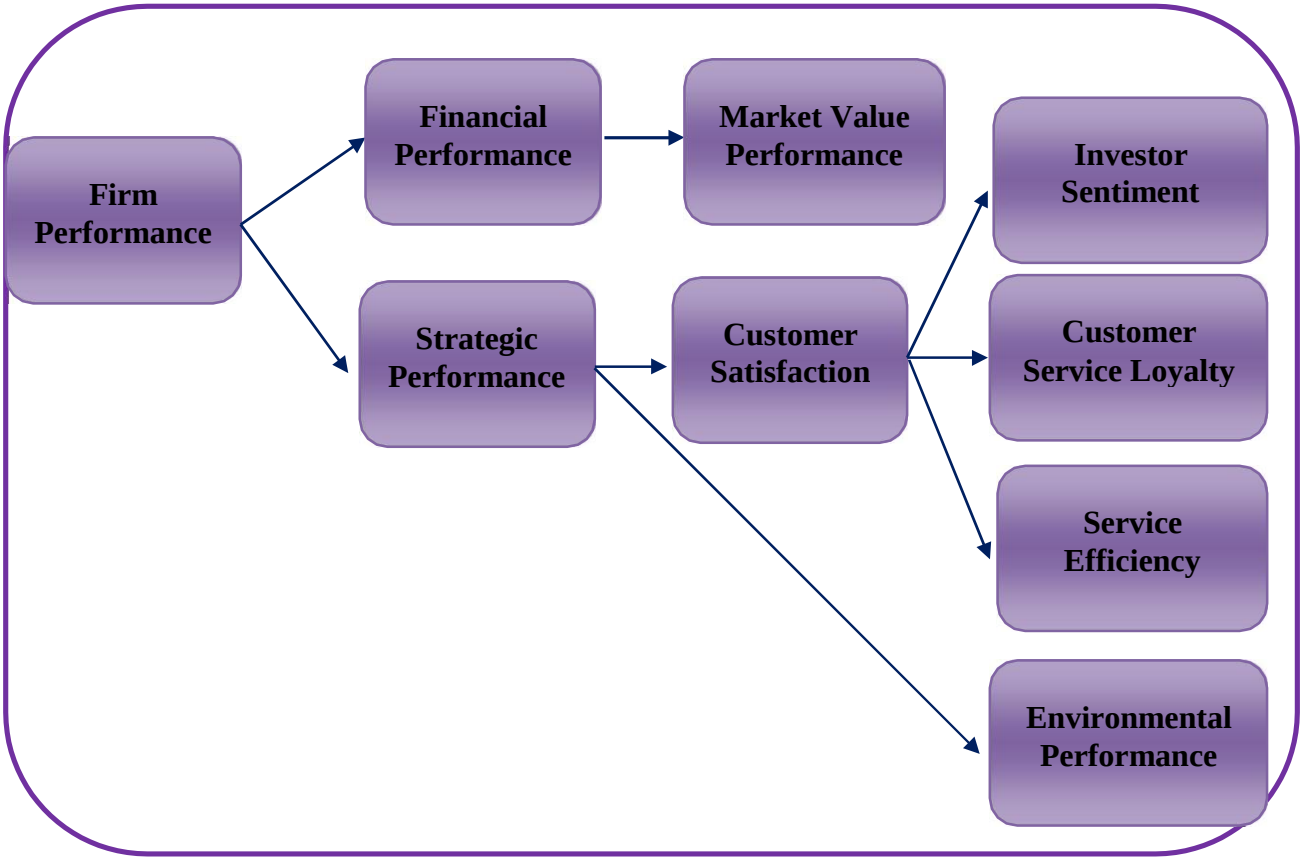
The model, suggested in this study, clearly identified at least nine dimensions, namely,i) profitability performance, ii) market value performance, iii)growth performance, iv)employee satisfaction, v)customer satisfaction, vi)environmental performance, vii) environmental audit performance, viii) corporate governance performance and ix) social performance. Multidimensionality implies indicators of different dimensions and cannot be used interchangeably since they

represent different aspects of firm's performance. The strategies may also have different impacts on each dimension**(Selvam et al., 2016[A41]).**

1.2.2. Focus of the Present Study

Based on the work and publications of the Researcher, the present study covers only three components: i) market value performance, ii) stakeholders satisfaction and iii) environmental performance. **Figure-1.3** shows the details of the components of firm performance,covered in this study.

Figure-1.3
Components of Firm Performance Covered in this Study



Source: Developed by the Researcher

Note:

1) The component, namely, Market value performance is analysed in **Chapter-2** of this study.
2) Three components, namely,i) Investor Sentiment,ii) Customer Loyalty and iii) Service Efficiency are discussed in **Chapter-3.**
3) The component, namely, Environmental performance, is examined in **Chapter-4** of this study.

1.3. SECTION C: Methodological Part of the Study

1.3.1. Statement of the Research Problem

The present day business environment is in the age of discontinuity in which the changes occur on a continuous and disruptive basis. This makes business firms difficult to predict the future performance of firm, with accuracy. The changes may be minor or significant. However, the degree of changes is not what really matters but the abilities of an organization, to effectively cope with these uncertainties in the levels of performance, are the big challenge. This, therefore, becomes the entry point for the application of strategic management in every organization **(Selvam et al., 2016[A41]).** Besides, the identification of the factors/dimensions, in respect of firm performance, is an underlying issue of this study. Besides, there is a wide gap, between academic researchers and practitioners, in respect of using a model to measure the performance of the firm, with high degree of accuracy **(Selvam et al., 2016[A41]). Richard et al., (2009)** rightly viewed that academic researchers may not be measuring the performance at which the managers of the firms are really engaged. But the practitioners may use this understanding of performance dimensionality, to judge the broader impact of their decisions and actions. Besides, the practitioners too could use the measures to control a company's position in the competitive environment **(Selvam et al., 2016[A41]).** Against this background, an attempt has been made in this study, to suggest a comprehensive subjective model, covering all relevant determinants, to measure the performance of the firm with accuracy, after carefully reviewing earlier articles published in academic journals and knowledge and experiences of researchers. Besides, an attempt has been made to analyse the firm performance using three variables, namely, market value performance, customers' satisfaction, and environmental performance.

1.3.2. Scope of the Study

A study on the firm'sperformance could be made from different dimensions such as profitability performance, growth performance, market value performance, employee satisfaction, customers' satisfaction, environmental performance, corporate governance performance and social performance. But the analysis of the present study covers only three dimensions, namely, market value performance, stockholder

satisfaction and environmental performance,as mentioned elsewhere in the present thesis, as the Researcher has made significant contributions regarding these three dimensions.

1.3.3. Importance of the Study

The study, on the identification of relevant determinants of firm's performance, is required in the context of disruptive and competitive business environment. The results of this study may be useful for advanced level of research as well as practitioners, to use a comprehensive model, to get accurate results on the firm's performance in general or on any one of the dimensions in particular. This study can be the base, for developing appropriate scales, for each dimension, by researchers who are interested in measuring firm's performance, across industries, with subjective indicators (**Boyd et al., 2005; Selvam et al., 2016[A41]).** The dimensional structure of the model could also help the researchers to select relevant performance indicators, for specific research problems. Besides, the proposed model can contribute to bridge the gap between academia and management practitioners**(Selvam et al., 2016[A41]).**The study could be useful, to understand the level of influence and impact of these three variables, namely, market value performance, stockholder satisfaction and environmental performance on the performance of the firm, which is a relevant construct in the strategic management research.

1.3.4. Objectives of the Study

The main objectives of the study are given below:

a. To frame a comprehensive subjective model to measure firm's performance.

b. To study the market value performance in respect of index movement on three dimensionsby applying Market Efficiency.

   b1. To analyse the stationary in the index returns of BSE sectoral indices.
   b2. To study the random distribution in the returns of BSE sectoral indices.
   b3. To examine the existence of weak firm efficiency in the return of BSE sectoral indices.

b4. To study the volatility in the returns of BSE sectoral indices.

c. To study the Stakeholders Satisfaction on the Firm's Performance in terms of Satisfaction of Investors (Investor sentiment), Customer Service Loyalty and Service Efficiency.

c1. To examine the influence of stock specific factors on Investors Sentiment (Investor Optimism, Investor Participation and Investor Stock Market Outlook).

c2. To study the Customer Loyalty in the respect of retail banking services.

c3. To examine the Service Efficiency of Pallavan Transport Corporation (PTC) from passenger's point of view.

d. To study Environmental Performance of the firms

d1. To study the impact of Profitability on the Environmental Performance of the Firm.

d2. To find out the existence of KEC relationship between Environmental and Financial performance of the firm.

d3. To examine the cause and effect relationship between Environmental and Profitability performance of Sample firm, and

e. To summarize the findings, suggestions and conclusion of the study.

1.3.5. Hypotheses of the Study

The present study was based on earlier quality publications, made in different referred journals, in different periods, with different sample sizes. Hypotheses, already tested in different studies, were used for this study also. Hypotheses, used in this study, are given below:

NH-2.1.1: There is no stationarity in the returns of BSE Sectoral Indices.

NH-2.1.2: There is no random distribution in the returns of BSE Sectoral Indices.

NH-2.1.3: There is no weak form efficiency in the returns of BSE Sectoral Indices.

NH-2.1.4: There is no volatility in the returns of BSE Sectoral Indices.

NH-2.2.1: There is no significant change in the market value performance of firms in respect ofevent announcements.

NH-2.3.1: There is no significant change in the market value performance of firms during calendar anomalies.

NH-3.1.1: There is no relationship between Investors' Optimism and Price Earning Ratio and familiarity with the Products and Services.

NH-3.1.2: There is no relationship between Investors' Optimism and Financial Characteristics.

NH-3.1.3: There is no relationship between Investors' Optimism and Psychological Factors.

NH-3.1.4: There is no relationship between Investors' Optimism and Quality of Management.

NH-3.1.5: There is no relationship between Investors' Optimism and Expected Eventssurrounding the Stock and Book Value.

NH-3.1.6: There is no relationship between Investors' Optimism and Recommendation of the Financial Community.

NH-3.1.7: There is no relationship between Investors' Optimism and Price cut off Rules.

NH-3.1.8: There is no relationship between Investors' Optimism and who else is Buying.

NH-3.1.9: There is no relationship between Investors' Optimism and Past Price Performance &Sector Attractiveness.

NH-3.1.10: There is no relationship between Investors' Participation and Price Earning Ratio and familiarity with the Products and Services.

NH-3.1.11: There is no relationship between Investors' Participation and Financial Characteristics.

NH-3.1.12: There is no relationship between Investors' Participation and Psychological Factors.

NH-3.1.13: There is no relationship between Investors' Participation and Quality of Management.

NH-3.1.14: There is no relationship between Investors' Participation and Expected Events Surrounding the Stock and Book Value.

NH-3.1.15: There is no relationship between Investors' Participation and Recommendation of the Financial Community.

NH-3.1.16: There is no relationship between Investors' Participation and Price cut off Rules.

NH-3.1.17: There is no relationship between Investors' Participation and who else is Buying.

NH-3.1.18: There is no relationship between Investors' Participation and Past Price Performance& Sector Attractiveness.

NH-3.1.19: There is no relationship between Investors' Stock Market Outlook and Price Earnings Ratio and Familiarity with the Products and Services.

NH-3.1.20: There is no relationship between Investors' Stock Market Outlook and Financial Characteristics.

NH-3.1.21: There is no relationship between Investors' Stock Market Outlook and PsychologicalFactors.

NH-3.1.22: There is no relationship between Investors' Stock Market Outlook and Quality of Management.

NH-3.1.23: There is no relationship between Investors' Stock Market Outlook andExpected Events surrounding the Stock and Book Value.

NH-3.1.24: There is no relationship between Investors' Stock Market Outlook and Recommendation of the Financial Community.

NH-3.1.25: There is no relationship between Investors' Stock Market Outlook and Price cut off Rules.

NH-3.1.26: There is no relationship between Investors' Stock Market Outlook and who else is Buying.

NH-3.1.27: There is no relationship between Investors' Stock Market Outlook and Past Price Performance & Sector Attractiveness.

NH-3.2.1: Customer Service Loyalty is not better indicated by dimensions, such as behavioral, attitudinal, cognitive, affective, conative, trust, commitment,word of mouth, complaining behavior and price tolerance.

NH-3.3.1: The proportion of people expressing their opinion on various factors as crucial withregard to Service Efficiency of PTC is not uniform for all groups of passengers (sex and occupation).

NH-3.3.2: Safe travel is not a deciding factor for measuring the Service Efficiency of PTC.

NH-4.1: There is no impact of Profitability variables on Environmental Performance of the Firm

NH-4.2: There is no Environmental Kuznets Curve (EKC) relationship betweenEnvironmental Performance and Financial Performance.

NH-4.3: There is no cause and effect relationship between the Profitability and Environmental Performance of the Firm.

1.3.6. Methods of the Study

This study was based, on earlier quality publications, made in different referred journals, for different study periods, with different sample sizes. The methodology and findings of earlier studies were used, as such, for the purpose of this study.

An attempt has been made in this study, to first suggest a comprehensive subjective model, after carefully reviewing the articles published in top academic professional and referred journals and subject knowledge of the researchers. Besides, to identify the potential indicators for each identified performance aspect, a particular variable was considered as relevant if the same variable was used for the analysis by other researchers and the results, using the variable, were published in more than two articles, in top journals **(Selvam et al., 2016[A41]).** Thus the subjective model was framed, with firm performance variables like growth performance, profitability

performance, market value performance, customers' satisfaction and employees' satisfaction, environmental performance, environmental audit performance, corporate governance performance and social performance. Further, the detailed analysis of determinants was restricted to three, namely, market value performance, stakeholders satisfaction and environmental performance, based on the publication works of researchers, in the form of articles (with co-authors), published in the referred journals and in the form of books. The results on these three determinants and the methodology followed to arrive at these results, like period of study and sample details, were taken from different earlier publications of the Researcher and those details were given, to the possible extent, in the respective chapters.

1.3.7. Period of the Study

The study period covered the publications, made in different periods, reflecting firm performance, carried out in the academic career of the Researcher, from 1988 to till date. Hence the period of the study is given, wherever possible, in the respective analytical part of the study.

1.3.8. Feedback

Corporate officials, like managers and other top officials, were contacted by the researchers and obtained their views and valuable information,which helped the researchers to identify the relevant determinants of firm's performance and develop the subjective model for the same.

1.3.9. Limitations of the Study

This study is the result of consolidated views of the Researcher, on the various firm performance parameters, proved in the research publications, authored by the Researcher. The following are some of the main limitations of the present research study:

- It is highly impossible for the Researcher, to cover all dimensions of the firm performance (such as Profitability performance, growth performance, market value performance, employee satisfaction, customers' satisfaction, environmental performance, corporate governance performance and social performance) in one study. Hence this study focused only on three

dimensions, namely, market value performance, stockholder satisfaction, and environmental performance in respect of the performance of the firm.

- As this study was mainly based on the earlier publications of the Researcher, over a period of 28years since 1988, the analyses on different dimensions of firm performance, could not be fixed to any specific period.
- The thesis of D.Litt is the compilation of published research works carried out earlier on different industries, at different periods. Hence, the Researcher was handicapped, to summarize the results, for all dimensions, relating to firm performance,on particular industry,at one time period.

In spite of all these limitations and difficulties, the study fulfilled its objectives and these limitations did not affect, in any way, the findings, scope and conclusion of the study.

1.3.10. Arrangement of the Chapters

The Thesis is divided into five chapters.

- The **FIRST** Chapter suggests a comprehensive subjective model, to measure the firm performance, explain the multi-dimensional model and methodology part of the study
- The **SECOND** Chapter explains the market value performance. The market value performance was studied in respect of index movement, on three dimensions, by applying market efficiency, event study and market anomalies.
- The **THIRD** Chapter analyses stakeholders' satisfaction, on the performance of firms, in terms of satisfaction of investors (investors' sentiment), customers' service loyalty and service efficiency.
- The **FOURTH** Chapter discusses the impact of profitability on environmental performance of the sample firm.
- The **FIFTH** and last Chapter gives the summary of findings, suggestions and conclusion of the study.

1.3.11. Concepts Used in the Study

Abnormal Returns: It is calculated as the excess return earned by changes in the stock over the benchmark portfolio **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Affective Loyalty: It refers to a stronger form of loyalty, where the loyalty intention is reinforced through satisfaction **(Sudhahar and Selvam, 2008[B1]).**

Announcement Period: The announcement period is the period surrounding the announcement of events (namely Quarterly Earnings, Dividend, New Listings, Mergers and Acquisitions, Right Issue, Bonus Issue, Stock split and Buy Back Announcement) by the companies **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Anomalies: Anomalies refer to seasonal effects that create higher or lower returns depending on the time. This cannot be explained by traditional asset pricing model (**Nageshwari and Selvam, 2012[B5]).**

Assurance: It means the knowledge and courtesy of employees of the bank e.g. ability to inspire trust and confidence of customers **(Sudhahar and Selvam, 2008[B1]).**

Attitudinal Loyalty: It deals the Loyalty which is based upon the individual's disposition toward repeat purchases **(Sudhahar and Selvam, 2008[B1]).**

Behavioral Loyalty: It refers that Loyalty in terms of 'outcome' characteristics, determined in terms of the sequence of purchase **(Sudhahar and Selvam, 2008[B1]).**

Calendar Anomaly / Seasonality Effect: The seasonality effect is also called the Calendar Effect. It includes many effects dealings with the factor of time. It is closely related to Weak-Form- Efficiency. Calendar Effects include: January Effect, Day of the Week Effect, the Month of the Year Effect, Semi-Month Effect, Holiday Effect, Monday Effect, Weekend Effect, and Turn of the Year Effect etc (**Nageshwari and Selvam, 2012[B5]).**

Cognitive Loyalty: It means to the Loyalty status where loyalty is based on the conscious evaluation of brand attributes or the conscious evaluation of the rewards

and benefits associated with repatronage, leading the consumer to consider a service provider at the expense of others (**Sudhaharand Selvam, 2008[B1]).**

Commitment: It refers to the 'enduring desire' of a customer to maintain and develop relationship with service provider (**Sudhahar and Selvam, 2008[B1])**

Complaining Behavior: It means the Customers complaining to the internal source upon facing any problem with the service provider with an intention of correcting the mistake **(Sudhahar and Selvam, 2008[B1]).**

Conative Loyalty: It refers to the state where customer holds '**intention to buy'** from the same service provider in the future also and is exemplified by repurchase intention **(Sudhahar and Selvam, 2008[B1]).**

Convenience: It means the extent to which banking firm takes into account the convenience of customers. e.g. convenient banking hours, location of branches, etc. **(Sudhahar and Selvam, 2008[B1]).**

Customer Loyalty: It refers to a status which occurs when customers repeatedly purchase a good or service over time and hold favorable attitudes towards a good or service **(Sudhahar and Selvam, 2008[B1]).**

Efficient Market: A market is said to be efficient if securities traded on the market capture the content of information in its prices rapidly and unabashedly **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Empathy: It means the caring, and individualized attention that a firm provides to its customers. e.g. understanding of customers need and problems **(Sudhahar and Selvam, 2008[B1]).**

Environmental Accounting: Environmental Accounting includes the data relating to Environmental Conservation Cost, Environmental Conservation Benefit, Economic Benefit associated with environmental conservation activities etc. The Environmental Accounting extends its scope in Financial Accounting and Management Accounting. Environment Management Accounting deals with the internal decision of the Company (**Vasanth et al., 2012[A26]).**

Environmental Kuznets Curve (EKC): Kuznets Curve is the graphical representation, based on the theory that during the time of economic development,

the inequality of the income among people is also increasing. **Kuznets (1955**) found the inverted U-shaped relationship between per capita income and economic inequality. The aspects of environmental degradation and the financial development were examined with the help of Kuznets Hypothesis (**Vasanth et al., 2015$_a^{A37}$).**

Environmental Performance of the Firm: The environmental impact of the firm can be measured by rating, the index or environmental score**.** In an industry, the consumption and demand for the energy is measured effectively by considering the Energy Intensity of the firm(**Vasanth et al., 2015$_b^{A38}$).**

Expected Events Surrounding the Stock and the Book Value (EESS): This is a factor which comprises of the various events and stock characteristics that the investors believe would influence the stock price of the investment decision. It covers the followings:

- Book Value
- Expected Stock Value, and
- Potential Takeover Target (**Bennet and Selvam, 2013^{B6}).**

Holiday Effect: Holiday Effect implies that the stock shows abnormally high return on days prior to holidays. To measure the holiday effect, the trading days were classified into three categories such as, Weekdays, Pre-Holidays and Post Holidays. Weekday is the day which has both at least one presiding and one succeeding day as trading day (**Nageshwari and Selvam, 2012$_b^{A25}$).**

Impact of Rolling Settlement: The Compulsory Rolling Settlement System was introduced by SEBI on January 02, 2002 in stock exchange. It reduces the market risk of stocks to a considerable extent. The investors get their money / securities much faster, thus enhancing their liquidity. The introduction of Compulsory Rolling Settlement leads to higher turnover and creates impact on the anomalous behavior of stock prices (**Nageshwari and Selvam, 2012^{B5}).**

Information Efficiency of Capital Market: A capital market in which stock price fully reflects all available information, can be termed as informationally efficient market. **Fama (1970)** classifies the informational efficiency into the following three

categories, depending on the information set that is fully reflected in the securities price:

- **Weak-Form-Efficiency,**popularly known as Random Walk Theory, asserts that the current stock price reflects all the information that is contained in the historical sequence prices.
- **Semi-Strong Form of Efficiency**theory states that current market prices not only reflect all information content of historical prices but also reflect all information, which are publically available about companies being studied.
- **Strong-Form of Efficiency** theory states that current market prices reflect all information, whether it is publically available or insider information **(Selvam and Anandbabu, 2009[A13]; Raja et al., 2009$_a$[A14]; Selvam, 2012[A11]; Bennet and Selvam, 2013[B6]).**

Investors' Optimism (IO): Investors' Optimism is perceived as 'nothing can go wrong' attitude among the investors. It is a belief that the Indian Stock Market can only go up and any setback is only temporary. The following two statements, as given below, were used to study the Investors' Optimism:

- In India, stock prices will rise for the next 12 months.
- If the Nifty / Sensex points dropped by 3% tomorrow, I would guess that the Nifty / Sensex would recover most of its losses in a few days**(Bennet and Selvam, 2013[B6]).**

Investors' Participation (IP): Investors' Participation is a comprehensive measure of sentiment since it includes market expectation and investors' level of participation. To know the investors' participation, two statements were used as follows:

- Presently, I will stay invested in the Indian Stock Market.
- I plan to increase my investments in the Indian Stock Market for the next 12 months **(Bennet and Selvam, 2013[B6]).**

Investors' Stock Market Outlook (ISMO): It is measured on the basis of the investors' view of the current stock market and theirexpectations of a market correction. Two statements, as given below, were used to assess the Investor Sentiment:

- In India, most stocks are overvalued, relative to their fundamental value
- A major stock market correction could happen in India, in the next 12 months **(Bennet and Selvam, 2013[B6]).**

January Effect: January Effect or Turn of the Year Effect is established that in January, the stock return is higher than the returns of other months of the year. It may be caused normally by significant low return in December (**Nageshwari, et al, 2013$_a$[A28]).**

Market Reaction / Stock Price Reaction: Marketreaction is measured by the changes in the stock prices. When the closing prices increase, then it is called positive reaction and vice versa. The price changes are measured for abnormal returns variability also **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Mergers and Acquisitions: It refers to the consolidation of companies. A merger is combination of two companies to form a new company while an acquisition is the purchase of one company by another in which no new company is formed **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Monday Effect: The Monday Effect means that the average returns of Mondays are significantly lower than the average returns of other days. Friday normally present the highest return over majority of the stock markets of the world (**Nageshwari, et al, 2011$_b$[A18]).**

Past Price Performance and Sector Attractiveness (PPSA): This factor contains two stock features, namely,

- The past price performance of the stock, including any recent price overreaction
- Are the stock and its Sector viewed 'hot'? (**Bennet and Selvam, 2013[B6]).**

Price Cutoff Rules (PCR): It plays a vital role in stock selection, though it is an irrational rule. They include rules like avoid buying shares more than rupees hundred etc. (**Bennet and Selvam, 2013[B6]).**

Price Earnings Ratio and Familiarity with the Products and Services (PERFPS): It includes

- Price to Earnings Ratio
- Familiarity with Products and Services (**Bennet and Selvam, 2013[B6]).**

Price Tolerance: It refers to willingness to pay a little more than the prevailing industry rates in order to get rid of perceived risk of switching from the existing service provider to the new one **(Sudhaharand Selvam, 2008[B1]).**

Profitability of the Firm: The profitability can be measured by a financial metrics which explains the ability of the firm to generate income over expenditure. It could be measured by variables like Return on Assets, Return on Equity, Return on Capital Employed, and Return on Sales **(Vasanth et al., 2015$_b$[A38]).**

Psychological Factors (PF): Psychological Factor plays an important role in stock selection. Psychological factors include investors' gut feeling, intuition, rumors and recommendation by friends, family and peer. Psychological Factors include the followings;

- Recommended by Friend, Family, Peer
- Investors' gut feeling
- Rumors **(Bennet and Selvam, 2013[B6]).**

Quality of Management (QM): The efficiency of the top management determines the performance of the company. Hence investors are particular about knowing the track record of the CEO and other Directors, before investing in any stock. It includes the followings:

- Industry sector to which stock belongs
- CEO / MD – track record, expertise.
- Quality of management (**Bennet and Selvam, 2013[B6]).**

Recommendation of the Financial Community (RCF): Before investing in any stock, the individual investor is anxious to get more information and recommendation from the financial community. This factor includes professional advice, from various sources, as given below:

- Recommended by analyst, research reports
- Recommended by broker
- Recommended by stock market 'gurus' (**Bennet and Selvam, 2013[B6]).**

Reliability: It refers to the consistency and dependability of firm performance e.g. a firm performing the service at right time and honoring its promise **(Sudhahar and Selvam, 2008[B1]).**

Responsiveness: The willingness and readiness of employees to provide service. For example, timeliness of service **(Sudhahar and Selvam, 2008[B1]).**

Retail Banking: Retail banking comprises deposits, investments, financing guarantees and transactional services of private persons and Small and Medium Enterprises (SMEs**) (Sudhahar and Selvam, 2008[B1]).**

Rights Issue: It isan offer of new shares, to existing shareholders, usually in a particular proportion to existing holdings. To ensure the sale of these issues, the shares are offered at a discount to current market prices **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Semi- Month Effect: The mean return of the First Half Month, witnessed higher return than Rest of the Days of the Month (**Nageshwari and Selvam, 2012[B5]).**

Service: Any act or performance that one party can offer to another, that is essentially intangible and does not result in the ownership of anything (**Sudhahar and Selvam, 2008[B1]).**

Service Loyalty: Loyalty status is exhibited by customers toward a service provider (**Sudhahar and Selvam, 2008[B1]).**

Service Quality: Customers' perception of service delivered against the expectations **(Sudhahar and Selvam, 2008[B1]).**

Service Efficiency: The service efficiency of STUs may be the achievement of social objectives and it need not necessarily be the profit earning capacity. In short, the service efficiency depends on some important aspects such as regularity, punctuality, cleanliness, comfort, courtesy, safety and reasonable cost (**Selvam, 2016$_a$[B12]).**

Service Satisfaction: Cumulative judgment of different encounters' outcome, generally based on customers' overall evaluation of service experience **(Sudhahar and Selvam, 2008[B1]).**

Stock Buyback: The repurchase of common stock or ordinary shares, either in the market or by tender **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Stock Specific Factors (SSF): Stock Specific Factors include nine factors such as Financial Characteristics, Psychological Factors, Quality of Management, Expected Events Surrounding the Stock and the Book Value, Recommendation of the Financial Community, Price Cut-off Rules, Who else Buy?, Past Price Performance and Sector Attractiveness and Price Earnings Ratio and Familiarity with the Products and Services (**Bennet and Selvam, 2013[B6]).**

Stock Split: It means that the face value of ordinary shares or common stock is divided to create additional number of issued shares. It raises no new capital for the company **(Raja and Selvam, 2011[B2]; Selvam, 2012$_a$[B3]; Selvam, 2012$_b$[B4]).**

Tangibility: It refers to the physical evidence of service. e.g. physical facilities, appearance of personnel, or tools or equipments used to provide service **(Sudhahar and Selvam, 2008[B1]).**

Trust: It means willingness to rely on an exchange partner on whom one has confidence **(Sudhahar and Selvam, 2008[B1]).**

Weekend Effect or Day of the Week Effect: It refers tothehighest mean return, earned on Friday and the lowest mean return on Tuesday. It was also found that Day of the Week Effect exists in the Indian Stock Market (**Nageshwari and Selvam, 2012$_a$[A24]).**

Who Else Buy? (WEB): Investors often study the names of institutional investors, who are behind the company issue, before confirming their investment decisions. It includes the following:

- Insider Buying
- Major Institutions & Corporations, currently buying the stock of the Company (**Bennet and Selvam, 2013[B6]).**

Word of Mouth: It means that recommending others to purchase, through any availableways, from the service provider with whom the customer is having established relationship **(Sudhahar and Selvam, 2008[B1])**.

2.0. Market Value Performance of Sample Firms

To minimize the gap between academics and practitioners, on the use of an appropriate model, a comprehensive subjective model, based on the reviews, has been suggested in the First Chapter, to measure the firm's performance. In this present Chapter, an attempt has been made to study the market value performance, which is one of the determinants of firm's performance. The market value performance has been studied, with reference to the index movement on three dimensions, by applying the concepts of market efficiency, event study and market anomalies.

An efficient functioning of the financial system facilitates the free flow of funds, to more productive activities and thus promotes investment **(Raja et al., 2009$_a$[A14]).** Stock markets play a crucial role in the growth of global economies **(Lingaraja et al., 2015$_a$[A34]).** Emerging market index has become an important and integrated part of global equity portfolio allocation. Among the emerging market regions, Asian Region has been considered as significant from the viewpoint of international portfolio diversification **(Lingaraja et al., 2014$_b$[A31]).** Countries like China and India, which till recently, had limited trade and investment interests in most of the Asian countries, are expanding their economic ties with several countries in the region. Recent years have also witnessed greater cross-border acquisitions within the Asian Region **(Lingaraja et al., 2014$_a$[A30]).** But the stock market movements have been highly unpredictable. As a result, investors do lose their returns from their investment. Besides, investors suffer, for want of a model, to safeguard their investment. With the advent of technological advances over the past two decades, the financial institutions and researchers have developed, computerized mathematical models, to maximize their returns while minimizing their risk. The creation of value in the stock market on par with their competitors is the key concern of a firm. The market value refers to the value of the firm according to the stock market. The market value depends on market price, which, in turn, depends on the

expectations of the investors about the firm. The market value represents the external assessment and expectation of firm's future performance. Market price has a correlation with historical profitability and growth of the firm. Information relevant to stock return is important for all stakeholders, including investors and general public. The maximization of wealth of all stakeholders, including investors, through better performance of business firms, has positive reflection in its share prices. The best as well as the weak performance of a firm are revealed in the stock market, by way of market price, which ultimately affects the market value of the firm **(Selvam, 2016$_{b}^{B13}$).**

An efficient market provides, on a continuous basis, a platform to engage in profitable trading activities **(Lingaraja et al., 2014$_{c}^{A32}$).** The efficient market hypothesis (EMH) predicts that the security prices reflect all publicly available information **(Nageswari and Selvam, 2012^{B5}).** Therefore, one corollary of the EMH is that one can sell (or buy) large blocks of stocks, nearer to the market price, as long as one could convince other investors that one has no private or inside information.

The efficiency of the stock market has direct consequences for the action of investors in the market and the wealth of countries. Investors need to understand the efficiency of the stock market indices, in order to invest their money in a profitable way while the policy makers need the latest information about the performance of different indices, to devise appropriate policies **(Ramkumar et al., 2015^{A40}).** The small and medium investors can be motivated to save and invest in the stock market, only if their securities in the market are appropriately priced **(Raja et al., 2009$_{b}^{A15}$).** The stock market measures the aggregate value of publicly traded companies. The firm can also succeed in equity capital issue when the stock market records a rising trend. Potential investors exist in greater abundance as more people put their money in stocks during bull markets. Prices are higher during a bull market and a company can sell each share for more money.

The stock market has been subjected to speculations and inefficiencies **(Selvam, 2014[B9]).** The stock market data would provide useful information that would facilitate better investing decisions of firm. The huge data, generated by the stock market, normally enable the researchers to develop modern tools, for employing sophisticated technologies, for stock market analysis. The investors trade with stock index - related instruments, to hedge risk and enjoy the benefit of arbitrage.

As pointed out earlier, the market value performance of firms could be studied total by analyzing the performance of firm, with respect to their stock, confirming the assumptions of Efficient Market Hypothesis or deviating from the assumptions of Efficient Market Hypothesis i.e., Calendar Anomalies. For the purpose of this study, the analysis of market value performance of firms is given in two sections **(Selvam, 2016$_c$[B14])**.

Section A – Following Rules of Efficient Market Hypothesis.

i) Index Movement through testing Weak Form Efficiency

ii) Index Movement through testing Semi-Strong Form Efficiency

Section B – Deviating from the Rules of Efficient Market Hypothesis.

i) Index Movement through testing Calendar Anomalies

2.1. SECTION – A: Following the Rules of Efficient Market Hypothesis

2.1.1. Analysis of Index Movement through testing Weak Form Efficiency

The sectoral index analysis of stock exchange is one way of measuring the economic growth. It quantifies the key parameters of economic growth. The analysis of different indices, helps the government and investors, to use it as the reference guide **(Ramkumar et al., 2012[A27]).** The sectoral index indicates the performance of the same kind of business in the country **(Ramkumar et al., 2015[A40]).** For the

purpose of analyzing index movement by applying market efficiency, the present study focused only on BSE sectoral indices**.** The sample BSE sectoral indices included BSE Automobile index, BSE Bankex, BSE Healthcare index, BSE Metal index and BSE Power Index. These were selected, on the basis of the following criteria:

- Turnover of five crores and above (per day)
- Availability of required data,
- Inclusion of firm in any one index.

The required data were collected from Prowess. The analysis of sectoral index movement (market efficiency) was divided, as follows:

2.1.1.1. Results of Descriptive Statistics for sample BSE Sectoral Indices.

2.1.1.2. Analysis of ADF Test for sample BSE Sectoral Indices

2.1.1.3. Results of Runs Test for sample BSE Sectoral Indices

2.1.1.4. Results of Autocorrelation for sample BSE Sectoral Indices, and

2.1.1.5. Results of GARCH for sample BSE Sectoral Indices

2.1.1.1. Results of Descriptive Statistics for Sample BSE Sectoral Indices

Table-2.1 depicts the results of descriptive statistics for daily share price returns of the six sample BSE Sectoral Indices. For the purpose of this study, the results were taken from the study of **Ramkumar and Selvam (2014[B8]).** As stated earlier, the Mean, Standard Deviation, Skewness and Kurtosis were used for the analysis. Mean average returns were positive, for all sample indices, namely, BSE Automobile, BSE Bankex, BSE Health Care, BSE Information Technology, BSE Metal and BSE Power Indices. It is interesting to note that BSE Metal Index recorded the highest returns, with high risk while BSE Health Care Index registered low returns, with low risk, during the study period.

Table-2.1
The Results of Descriptive Statistics for BSE Sectoral Indices during the Study Period from 01.01.2006 to 31.12.2011

Descriptive Statistics / Name of the Sample Indices	Mean	Minimum	Maximum	Standard Deviation	Skewness	Kurtosis
BSE Automobile Index	0.0589	-10.43	11.21	1.74484	-0.208	3.525
BSE Bankex	0.0669	-12.62	19.18	2.34176	0.329	4.966
BSE Health Care Index	0.0516	-8.26	8.06	1.32967	-0.490	4.834
BSE Information Technology Index	0.0491	-10.10	11.39	2.01202	0.213	2.694
BSE Metal Index	0.0592	-13.30	16.10	2.63876	-0.148	3.108
BSE Power Index	0.0353	-11.43	18.33	2.06306	0.256	7.537

SOURCE:Ramkumar and Selvam (2014[B8]), Efficiency of BSE Sectoral Indices in India, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19)).

The analysis of skewness revealed that out of six sample indices, only three indices registered positive values, i.e BSE Bankex (0.329), BSE Information Technology Index (0.213), BSE Power Index (0.256). The remaining three indices (such as BSE Automobile Index, BSE Health Care Index, BSE Metal Index) earned negatively skewed values (i.e., -0.208, -0.0490 and -0.148 respectively). According to the analysis of Kurtosis, the obtained values were positive, for all six sample indices, during the period of study. Out of six sample indices, only one index, namely, BSE Information Technology Index (2.694), earned a value below the level of three. Thus the Index, with a value below three, made it Platykurtic. The values of remaining five indices (such as BSE Automobile Index (3.525), BSE Bankex (4.966), BSE Health Care Index (4.834), BSE Metal Index (3.108) and BSE power Index (7.537)), as shown in the **Table-2.1,** were more than three and hence rendered them Leptokurtic.

2.1.1.2. Analysis of ADF Test for Sample BSE Sectoral Indices

The results of the Augmented Dickey Fuller Test, for daily indices returns in respect of sample BSE Sectoral Indices, listed during the period from 01st January

2006 to 31st December 2011, are presented in **Table-2.2.**The different BSE Indices, taken for this study, included BSE Automobile Index, BSE Bankex, BSE Health Care Index, BSE Information Technology Index, BSE Metal Index and BSE Power Index. The results of ADF Test, taken from the study of **Ramkumar and Selvam (2014[B8])**, were used in this study also. It is to be noted that the values of test critical, for all sample indices, were analyzed at significant levels of 1%, 5% and 10%. The probability value, for all the six sample indices, was zero. The statistical values, for all sample indices, were less than that of test critical values, at 1%, 5% and 10% levels of significance. This indicated the fact that the returns data of all sample indices attained stationarity, during the study period. According to the analysis of Durbin Watson Test, the values for all sample indices were below the value of two, i.e 1.69990 (BSE Automobile Index), 1.71423 (BSE Bankex), 1.86592 (BSE Health Care Index), 1.96676 (BSE Information Technology Index), 1.75662 (BSE Metal Index) and 1.80436 (BSE Power Index). This indicated that the return data of all sample indices were found to have attained stationarity, during the study period.

Table-2.2
Analysis of ADF Test for BSE Sample Sectoral Indices during the Study Period from 01.01.2006 to 31.12.2011

Statistical Tools / Sample Indices	Statistical Value	1%	5%	10%	Probability Value	Durbin Watson Test
BSE Automobile Index	-33.14401	-3.434543	-2.863279	-2.567744	0.0000000	1.69990
BSE Bankex	-33.39364	-3.434543	-2.863279	-2.567744	0.0000000	1.71423
BSE Health Care Index	-36.03489	-3.434543	-2.863279	-2.567744	0.0000000	1.86592
BSE Information Technology Index	-29.37112	-3.434546	-2.863280	-2.567745	0.0000000	1.96676
BSE Metal Index	-34.09569	-3.434543	-2.863279	-2.567744	0.0000000	1.75662
BSE Power Index	-34.92662	-3.434543	-2.863279	-2.567744	0.0000000	1.80436

SOURCE:Ramkumar and Selvam (2014[B8]), Efficiency of BSE Sectoral Indices in India, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed from E Views (Version 7))

Note: Critical Value at 1%, 5% and 10% level of significance.

Testing of Hypothesis

The overall results of Augmented Dickey Fuller Test and Durbin Watson Test, indicated that six sample indices (Automobile Index, Bankex, Health Care Index, Information Technology Index, Metal Index and Power Index), from BSE, were found to attain stationarity, for daily indices return, during the study period. Hence, the Null Hypothesis **(NH-2.1.1) - "There is no stationarity in the returns of BSE Sectoral Indices",** is rejected.

2.1.1.3. Results of Runs Test for BSE Sample Sectoral Indices

Table-2.3 reports the results of Runs Test, for daily share price returns of the BSE sample indices (BSE Automobile Index, BSE Bankex, BSE Health Care Index, BSE Information Technology Index, BSE Metal Index and BSE Power Index).

Table-2.3
The Results of Runs Test for BSE Sample Sectoral Indices during the Study Period from 01.01.2006 to 31.12.2011

Statistical Tools / Name of the Indices	Number of Runs	Z Value*	Significant Value
BSE Automobile Index	707	-1.899	0.058
BSE Bankex	646	-5.110	0.000
BSE Health Care Index	708	-1.883	0.060
BSE Information Technology Index	718	-1.347	0.178
BSE Metal Index	686	-2.993	0.003
BSE Power Index	673	-3.669	0.000

SOURCE: Ramkumar and Selvam (2014[B8]), Efficiency of BSE Sectoral Indices in India, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed from E Views (Version 7)).

Note: * Z value calculated at 5% level of Significance

The results of runs test, for BSE sample sectoral indices, were taken from the study of **Ramkumar and Selvam (2014[B8]).** Out of six indices, three sample indices, namely, BSE Automobile Index, BSE Health Care Index and BSE IT Index, earned values in between ± 1.96. The remaining sample indices, namely, BSE Bankex, BSE Metal Index and BSE Power Index, were not randomly distributed, at the 5% level of significance.

Testing of Hypothesis

The overall analysis indicated that the returns data of three sample indices, out of six indices, were not randomly distributed, during the study period. Hence, the Null Hypothesis **(NH-2.1.2)** namely, **"There is no random distribution in the returns of BSE Sectoral Indices",** in respect of BSE Bankex, BSE Metal Index and BSEPower Index, is accepted. At the same, time the above hypothesis is rejected, in respect of BSE Auto, BSE Healthcare and BSE IT.

2.1.1.4. Results of Autocorrelation for Sample BSE Sectoral Indices

The results of autocorrelation, for daily returns of the sample BSE Sectoral Indices (BSE Automobile Index, BSE Bankex, BSE Health Care Index, BSE Information Technology Index, BSE Metal Index and BSE Power Index), during the study period from 01.01.2006 to 31.12.2011, are reported in **Table-2.4**. The results of autocorrelation for BSE sectoral indices, were taken from the study of **Ramkumar and Selvam (2014[B8]).** 24 lags were used, for the analysis, during the study period. The analysis of autocorrelation coefficients, for BSE Automobile Index, was significant at 5% level of significant, with positive values at 1st, 12th, 13th and 17th lags. The autocorrelation results of BSE Bankex, indicated that out of 24 lags, two lags (1st and 8th lag) were significant at 95% level of confidence. The highest magnitude of coefficient was 0.0142, at lag one, during the study period.

Table-2.4

The Results of Autocorrelation for BSE Sectoral Indices during the Study Period from 01.01.2006 to 31.12.2011

Sectoral Indices / Lags	BSE Automobile Index	BSE Bankex	BSE Health Care Index	BSE IT Index	BSE Metal Index	BSE Power Index
1	0.149*	0.0142*	0.067*	0.015	0.121*	0.098*
2	0.038	-0.008	0.032	-0.083	0.022	-0.011
3	-0.032	-0.016	0.012	-0.063	0.009	0.004
4	-0.019	-0.035	-0.002	-0.012	-0.034	-0.012
5	-0.029	-0.060	-0.001	0.017	0.002	-0.007
6	-0.015	-0.082	-0.035	-0.009	-0.008	-0.055
7	0.041	-0.006	0.046	0.006	0.033	0.024
8	0.020	0.063*	0.033	0.045	0.088*	0.082*
9	0.005	0.022	-0.005	0.016	0.042	0.027
10	0.023	0.007	0.046	0.023	-0.027	0.006
11	0.015	0.030	0.010	0.001	-0.030	-0.041
12	0.052*	0.014	0.034	-0.005	0.012	-0.012
13	0.051*	0.004	0.073*	-0.021	0.022	0.026
14	0.024	0.035	0.065*	0.013	0.048	0.071*
15	0.024	0.015	-0.006	-0.009	0.040	0.027
16	0.015	0.031	0.009	0.010	0.030	0.040
17	0.050*	0.039	0.071*	0.074*	0.056*	0.074*
18	0.020	-0.023	-0.015	0.025	-0.004	-0.008
19	0.014	-0.025	-0.003	0.044	0.032	0.006
20	-0.047	-0.041	-0.002	-0.064	-0.039	-0.043
21	-0.007	0.013	-0.004	-0.010	-0.004	0.028
22	-0.017	0.025	-0.024	0.005	0.014	0.002
23	-0.028	-0.009	-0.065	-0.041	-0.019	-0.004
24	0.020	-0.007	0.015	-0.009	0.011	0.031

SOURCE:Ramkumar and Selvam (2014[B8]), Efficiency of BSE Sectoral Indices in India, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed from E Views (Version 7)).

Note: * Positive value at 5% level of significance

It was revealed that the autocorrelation coefficient value of BSE Health Care Index, was significant, at 5% level and there were positive values at 1st, 13th,14th and 17th lags during the study period. The analysis of BSE IT Index clearly indicated the fact that out of 24 lags, only one lag (17th lag) was significant while the remaining lags were insignificant, at 5% level of significance. The autocorrelation analysis was performed, for 24 lags of daily returns for BSE Metal Index, during the study period. It was found that the autocorrelation coefficients for 1st lag, 8th lag and 17th lags, were significant at 5% level of significance, for BSE Metal Index. The results of autocorrelation coefficient for BSE Power Index, during the study period, indicated that the autocorrelation coefficients were significant, at 95% of confidence level, with positive values at 1st, 8th, 14th and 17th lags, during the study period.

Testing of Hypothesis

The overall results of Autocorrelation Function, revealed that six sample indices (Automobile Index, Bankex, Health Care Index, Information Technology Index, Metal Index and Power Index), used from BSE, did not follow significant autocorrelation, during the study period. According to the analysis of Autocorrelation Function, the Null Hypothesis **(NH-2.1.3) - "There is no weak form efficiency in the returnsof BSE Sectoral Indices",** is accepted.

2.1.1.5. Results of Volatility using GARCH (1, 1) Model for BSE Sample Sectoral Indices

Table-2.5 displays the results, for daily share price returns, using Garch (1,1), for daily share price of BSE samplesectoral indices, during the study period from 01.01.2006 to 31.12.2011. The results of Garch (1.1) model, in respect of BSE sample sectoral indices, were taken from the study of **Ramkumar and Selvam (2014[B8]).**The sample indices included BSE Automobile Index, BSE Bankex, BSE Health Care Index, BSE Information Technology Index, BSE Metal Index and BSE Power Index. From the Table, it is clearly observed that the probability value was

zero, at 1% level of significance, during the study period. The coefficient value (0.133115) was high for BSE IT Index, during the study period. The values of α+ β, for all sample indices, were close to one, except one index, namely, BSE Power Index. Out of six sample indices, the values of α+β, for five indices, were at 0.968321 for BSE Automobile Index, 0.991409 for BSE Bankex, 0.965376 for BSE Health Care Index, 0.971081 for BSE Information Technology Index, 0.986693 for BSE Metal Index and it was1.002350 for BSE Power Index. The values, for BSE Power Index (1.002350), were highly volatile during the study period. The analysis of Garch (1,1) model, for BSE sectoral indices, indicated that the null hypothesis **(NH-2.1.4)** - **"There is no volatility in the returnsof BSE Sectoral Indices",** is accepted, for all sample indices, except BSE Power.

Table-2.5

Results of Volatility using GARCH (1, 1) Model for BSE Sample Sectoral Indicesduring the Study Period from 01.01.2006 to 31.12.2011

Statistical Tools / Sample Index	C	α	β	α+β	P
BSE Automobile Index	0.102693	0.10361	0.864711	0.968321	0.0000
BSE Bankex	0.059957	0.087386	0.904023	0.991409	0.0000
BSE Health Care Index	0.06455	0.107954	0.857422	0.965376	0.0000
BSE IT Index	0.133115	0.144482	0.826599	0.971081	0.0000
BSE Metal Index	0.111128	0.10048	0.886213	0.986693	0.0000
BSE Power Index	0.04432	0.137593	0.864757	1.002350	0.00000

Source:Ramkumar and Selvam (2014[B8]), Efficiency of BSE Sectoral Indices in Indices, Lambert Academic Publishing, Germany ((Originally Collected from PROWESS Corporate Database and Computed from E Views (Version 7)).

Note: C – Coefficient;α– Alpha;β– Beta; P – Probability

It is to be noted that the performance of the firm is reflected in the performance index, more particularly in the performance of sectoral indices. The market value performance of firms was analysed by assessing their stationarity, randomness, weak form efficiency and volatility of sample index (**Table-2.6**). The stationarity of market values, in all the six sectors, enabled further examinations. Among the six, BSE Bankex and BSE Metal recorded significant change in the market value performance since there was absence of randomness, weak form efficiency and volatility. The sample indices, namely, BSE Auto, BSE Healthcare, and BSE IT, did not record weak form efficiency and volatility, though the randomness was observed. Thus, the market value performance of the firms, belonging to these three sectors, recorded moderate changes. At the same time, the market value of the firms, pertaining to Power Sector, recorded significant volatility. The analysis of this section clearly revealed that the measurement of performance, through index performance, was the determinant of firm performance. Hence firms need to focus on the performance of sectoral indices.

Table -2.6
Market Value Performance in respect of Market Efficiency

Sample Indices	Stationarity	Randomness	Weak Form Efficiency	Volatility
BSE Auto	□	□	*	*
BSE Bankex	□	*	*	*
BSE Healthcare	□	□	*	*
BSE IT	□	□	*	*
BSE Metal	□	*	*	*
BSE Power	□	*	*	□

Source: Developed by author from **Table – 2.2 to 2.5**
* Indicates Accepted
□ Indicates Rejected

2.1.2. Index Movement through testing Semi-Strong Form Efficiency

The index movement is an important barometer of market value performance of a company. The favourable market performance is useful for a company, seeking additional equity financing. If there is demand for money, a company can always sell more shares to the public to raise money.

A capital market is said to be efficient, if the corporate event announcement (stock split, buyback, rights issue, bonus announcement, merger and acquisition, dividend etc), contained information and it is reflected in stock prices. How quickly and correctly the security prices reflect these events, which contain information, show the efficiency of stock markets (**Raja et al., 2009$_b$[A15]**).

The goal of an event study is, to measure the effects of an economic event, on the value of firms. Event study methods exploit the fact that given rationality in the market place, the effects of an event will be reflected immediately in security prices. Hence the impact needs to be measured, by examining security prices, surrounding the event. There are different events like Mergers and Acquisitions, Quarterly Earnings, Dividend Issue, Bonus Issue, Stock Split, Buyback of Share, etc. that have impact on the prices of securities in the capital market. For the purpose of this study, detailed analysis of five events was made while covering all the eight events for the general analysis.

Analysis of Index Movement (Event Study) through testing Semi-Strong Form Efficiency

The analysis of index movement (event study) was divided as follows:

2.1.2.1. Average Value of SRV for All Sample Event Announcements during different window periods

2.1.2.2. AAR for all Sample Event Announcements during different window periods

2.1.2.1. Average Value of SRV for All Sample Event Announcements

Table-2.7 shows the average values of SRV, for all sample events (Quarterly Earnings, Dividend, New listings, Mergers and Acquisitions, Rights Issue, Bonus Issue, Stock Split and Buy Back announcement), during different window periods of banking companies. The results of the earlier study, in respect of SRV for the sample event announcements, by **Selvam (2012$_b$[B4])**were used for this study also. The value

of more than one percent was recorded during the period of 41 days (from day -20 to day +20), for the events, namely, dividend, new listings, rights issue, bonus issue and buy back. The Table revealed that to note that the highest value of ASRV (1.12) was recorded, during the pre announcement period of 20 days (from day 20 to day 1), for bonus announcement. The average SRV of more than one was recorded, during the pre announcement period, for quarterly earnings, M&A and bonus announcement. During the post announcement period of 21 days (from day 0 to day 20), majority of sample events (Dividend, New listings, Rights issue, Buy Back and Stock Split), recorded ASRV values of 1.05, 1.04, 1.16, 1.13 and 1.15 respectively. The overall analysis of the **Table - 2.7**indicated that the stock market (BSE) positively received the information contents of dividend new listings, rights issue, and buy back, around the announcement period because the value of SRV, during this period, was above one. In other words, the performance of the firm, around different announcements, was reflected in the index movement. Hence firms should study the information of events so as to maintain the value of the firms.

Table-2.7
Average Value of SRV for All Sample Event Announcements

Sample Events	Window Periods		
	Day -20 to 20	Day -20 to -1	Day 0 to 20
Quarterly Earnings	0.99	1.01	0.98
Dividend	1.00	0.95	1.05
New Listings	1.00	0.95	1.04
Mergers and Acquisitions	0.99	1.02	0.96
Rights Issue	1.01	0.86	1.16
Bonus Issue	1.01	1.12	0.90
Buy Back	1.03	0.94	1.13
Stock Split	0.98	0.80	1.15

SOURCE: **Selvam (2012$_{b}^{B4}$),** Analysis of Indian Capital Market Efficiency with respect to Banking Industry, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

2.1.2.2. AAR for All the Sample Event Announcements during different Window Periods

The values of AAR, for all sample event (Quarterly Earnings, Dividend, New listings, Mergers and Acquisitions, Rights Issue, Bonus Issue, Stock Split and Buy Back) announcements, during different window periods by banking companies, are

given in **Table-2.8.** The results of the earlier study, in respect of ARR for sample event announcements, by **Selvam (2012$_b$[B4]),**were used for this study also. Positive values of AAR were recorded, during the period of 41 days (from day -20 to day +20), for all the events, except the new listings, during the pre announcement period (from day -20 to day -1). It is important to note that all the events earned positive AAR values and the highest value (0.36) of ARR was recorded, during the pre announcement period of 20 days (from day -20 to day -1), under rights issue announcement. The lowest value of AAR, during the 21 days post announcement period (from day 0 to day +20), was recorded for stock split, dividend and quarterly earnings, with values of -0.20, -0.03 and -0.02 respectively. During this period (from day 0 to day +20), stock market did not react positively, in absorbing the information content of those announcements (stock split, dividend and quarterly earnings). The overall analysis of the Table indicated that the stock market positively received the information contents in respect of M&A, rights issue, bonus issue and buy back events, around the announcement period, because the value of AAR, during this period, was positive. The analysis of AAR further confirmed the fact that performance of firms, followed by different announcements, was confirmed by index movement.

Table-2.8
AAR for all Sample Events during different Window Periods

Sample Events	Window Periods		
	Day -20 to 20	**Day -20 to -1**	**Day 0 to 20**
Quarterly Earnings	0.05	0.13	-0.02
Dividend	0.02	0.07	-0.03
New Listings	0.04	-0.02	0.09
Mergers and Acquisitions	0.13	0.26	0.01
Rights Issue	0.25	0.36	0.15
Bonus Issue	0.17	0.06	0.27
Stock Split	0.03	0.28	-0.20
Buy Back	0.12	0.03	0.20

SOURCE:**Selvam (2012$_b$[B4]),** Analysis of Indian Capital Market Efficiency withrespect to Banking Industry, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

` The market value performance of firms, during pre and post event announcements, is presented in **Table-2.9.** The sample event, announcements like dividend, quarterly earnings, new listings, M&A and rights issues, did not have any significant impact on the market value of firms. This led to the conclusion that **NH-2.2.1, there is no significant change in the market value performance of firms in respect of event announcements,** is accepted **(Selvam, 2016$_b$[B13]).**

Table-2.9: Market Value Performance of Firms during Event Announcements

Events	Impact on Market Value
Dividend	*
Quarterly Earnings	*
New Listings	*
Mergers & Acquisitions	*
Rights Issue	*

Source: Developed by author from **Tables 2.7 and 2.8**

* Indicates Accepted

2.2. Section-B: Deviating from the Rules of Efficient Market Hypothesis

2.2.1. Index Movement through testing Calendar Anomalies

Calendar Anomalies, in the stock market, are those patterns that cannot be explained by traditional asset pricing models **(Nageswari, et al., 2013$_b$[A29]).** Any anomaly would enable the investors and speculators, to gain abnormal return **(Nageswari, et al., 2013$_a$[A28]).** Financial market anomalies are cross-sectional and time series patterns and they result in security returns, that are not predicted by a central paradigm or theory. Documentation of anomalies often presages a transition towards a new paradigm. Firms and Governments generally release good news between Monday and Friday and bad news on the weekends. As a result, the bad news are reflected in lower stock prices, on the next trading day (Mondays) and good news is reflected in higher stock prices on Friday. This would actually reduce the share price further. Similarly, in the month of January, firms normally release new information, pertaining to the previous accounting year. When new positive

information reaches the market, the prices become bullish due to buying pressure. The active trading strategies, based on the knowledge of market anomalies, would provide benefits to the investors. But the countervailing arbitrage will also exploit the excess return over time. In this environment, it is necessary to periodically find out whether these types of anomalies exist in the stock market **(Nageswari et al., 2011$_b$[A18]; Nageswari and Selvam, 2012$_a$[A24]; Nageswari and Selvam, 2012$_b$[A25]).** Stock market volatility responds differently to the arrival of positive and negative news in the market **(Selvam et al., 2007[A8]).** The stock returns exhibits systematic patterns, at certain times of the day, week or month **(Nageswari and Selvam, 2011[A16]).** The different patterns, identified in stock returns, include the January Effect, day of the week effect, and different monthly effects (Turn of the month effect, Semi month effect, the End of the month effect etc) **(Nageswari et al., 2011$_a$[A17]).**

As stated earlier,the Compulsory Rolling Settlement System was introduced by SEBI on January 02, 2002, in the stock exchange. It reduces the market risk of stocks to a considerable extent. The investors get their money/securities much faster, thus enhancing their liquidity. The Compulsory Rolling Settlement System leads to higher turnover and creates impact on the anomalous behavior of stock prices **(Nageswari and Selvam, 2012[B5]).**

Analysis of Index Movement - Market Anomalies

The market anomalies were studied, in respect of day of the week effect, month effect, semi month and turn of the month effect and holiday effect, in Indian stock market. The analysis is divided as follows:

2.2.1.1. Day of the Week Effect

2.2.1.2. Month Effect

2.2.1.3. Semi Month and Turn of the Month Effect, and

2.2.1.4. Holiday Effect (**Selvam, 2016$_b$[B13]**).

2.2.1.1. Day of the Week Effect

a) Analysis of Descriptive Statistics for BSE Sensex (Week Effect)

The results of Descriptive Statistics, for the daily data, from April 2002 to March 2010, are shown in **Table -2.10.** The results of the study, in respect of day of the week effect, by **Nageswari and Selvam (2012[B5]),** were used in the study for the purpose of analyzing the day of the week effect. The Tableshows that the mean returns of BSE Sensex Index were positive, for all trading days of the week, in 2005-06 and higher daily mean returns (0.6660) were recorded, on Friday, in 2003-04 and lower/negative returns (-0.3706) on Thursday, in 2008-09. During the period 2005-06 and 2009-10, the positive mean returns were recorded, for all trading days of the week. An important finding was that there were negative returns, for both Monday and Friday, in 2004-05.

The Standard Deviation of Returns (3.4583) was the highest, on Thursday, in 2008-09 and the lowest (0.7696), on Wednesday in 2002-03. This indicated that the BSE Sensex Index was more volatile on Thursday and least volatile on Wednesday, during the study period. Hence the Day Trader could benefit from such volatility. The Standard Deviation of the returns was high in 2008-09. In other words, the stock market was more volatile during that period because of the impact of US Financial Crisis. The Skewness of the returns distribution was positive, for all trading days of the week, except on Friday in 2009-10 and negatively skewed, for all trading days of the week, in 2005-06 & 2006-07.

Table-2.10

The Results of Descriptive Statistics for BSE Sensex Index Daily Returns from April 2002 to March 2010

Year	Statistics	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
2002-03	**Mean**	-0.2197	-0.0831	-0.1403	0.0632	0.0901	-0.0552
	Std. Dev.	1.0807	1.0658	**0.7696**	0.9831	1.1289	1.0136
	Skewness	-0.1249	-0.5314	0.0502	-0.0589	1.0949	0.1636
	Kurtosis	2.3753	3.8774	3.4972	2.5738	6.0309	4.2778
	Jarque-Bera	0.9808	3.7988	0.5145	0.4073	29.7099	18.1238
	Probability	0.6124	0.1497	0.7732	0.8158	0.0000	0.0001
	Observations	52	48	48	50	51	249
2003-04	**Mean**	0.2575	0.1635	0.2151	-0.1398	**0.6660**	0.2387
	Std. Dev.	1.5199	1.2477	1.1607	1.4542	1.3003	1.3496
	Skewness	-0.5374	0.4185	-0.3484	-0.3251	-0.3751	-0.3018
	Kurtosis	2.7171	3.3635	3.0990	2.3593	2.9842	2.9282
	Jarque-Bera	2.5223	1.8044	1.0735	1.7011	1.1730	3.9096
	Probability	0.2833	0.4057	0.5846	0.4272	0.5563	0.1416
	Observations	49	52	52	49	50	252
2004-05	**Mean**	-0.0961	0.1846	-0.0652	0.3202	-0.0692	0.0591
	Std. Dev.	2.0351	1.6137	1.0137	1.0810	1.5505	1.4957
	Skewness	-3.7749	1.4605	-0.1751	-0.3691	-1.7127	-1.9179
	Kurtosis	23.1753	12.6587	3.7415	2.6780	7.9391	21.6100
	Jarque-Bera	966.7585	220.6170	1.3727	1.4327	70.7501	3806.0130
	Probability	0.0000	0.0000	0.5034	0.4885	0.0000	0.0000
	Observations	50	52	49	53	47	251
2005-06	**Mean**	0.3597	0.2165	0.2787	0.0549	0.1811	0.2201
	Std. Dev.	1.1029	0.8698	0.9372	1.1105	1.1214	1.0264
	Skewness	-0.1326	-0.2055	-0.4504	-0.8111	-0.7423	-0.5170
	Kurtosis	3.0814	2.4666	2.7532	3.6409	3.8778	3.6081
	Jarque-Bera	0.1636	0.9635	1.7445	5.9573	6.4452	15.0473
	Probability	0.9215	0.6177	0.4180	0.0509	0.0399	0.0005
	Observations	51	51	48	47	52	249
2006-07	**Mean**	-0.3017	-0.0746	0.0362	0.3926	0.1824	0.0592
	Std. Dev.	1.7881	1.4916	1.6474	2.0144	1.7673	1.7471
	Skewness	-0.8255	-0.4334	-0.5503	-0.6575	0.5697	-0.3598
	Kurtosis	2.6718	3.6265	2.9771	7.1736	4.2559	4.8874
	Jarque-Bera	5.6672	2.2400	2.5756	40.6896	5.8710	42.3311
	Probability	0.0588	0.3263	0.2759	0.0000	0.0531	0.0000
	Observations	48	47	51	51	49	246

Continued…

Table - 2.10 Continued…

Year	Statistics	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
2007-08	**Mean**	-0.1707	0.2401	0.2103	-0.1724	0.2356	0.0716
	Std. Dev.	2.4358	1.7673	1.8239	1.6096	1.8872	1.9281
	Skewness	-1.1364	0.5154	0.2973	-0.6433	0.2785	-0.4198
	Kurtosis	4.2725	6.1951	3.8012	5.4660	4.1860	5.2668
	Jarque-Bera	14.9837	23.0117	2.0737	16.1184	3.4337	61.1136
	Probability	0.0006	0.0000	0.3546	0.0003	0.1796	0.0000
	Observations	53	49	50	50	48	250
2008-09	**Mean**	-0.0728	-0.2272	-0.0102	-0.3706	**-0.3163**	-0.1963
	Std. Dev.	2.8967	2.4421	2.8018	2.2790	**3.4583**	2.7955
	Skewness	0.3250	-0.1019	-0.2763	0.3781	-0.4625	-0.1389
	Kurtosis	2.7105	3.2716	3.3333	2.7645	4.2267	3.8735
	Jarque-Bera	1.0129	0.2450	0.8674	1.1499	4.9175	8.5059
	Probability	0.6026	0.8847	0.6481	0.5627	0.0855	0.0142
	Observations	48	51	50	44	50	243
2009-10	**Mean**	0.4132	0.1454	0.3239	0.0463	0.2907	0.2421
	Std. Dev.	3.0339	1.4667	1.6386	1.4468	1.3900	1.8664
	Skewness	2.8656	0.0598	0.1925	0.4280	-0.0029	2.4387
	Kurtosis	16.7594	3.7495	2.6230	3.9586	2.5829	23.1648
	Jarque-Bera	425.8235	1.1520	0.6290	3.5096	0.3262	4375.7960
	Probability	0.0000	0.5621	0.7301	0.1729	0.8495	0.0000
	Observations	46	48	52	51	45	242

SOURCE: Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

The Peak of the return distribution indicated that it was Platykurtic,during some trading days when the value was less than three and Leptokurtic, for all other trading days. It implied that majority of the return series were close to the mean. For testing the normality of the return series, the Jarque Bera Test was used. The analysis of J.B Test revealed that in 2003-04, BSE Sensex daily returns were distributed normally, for all trading days of the week.

Table- 2.11 describes the Descriptive Statistics, for the daily data, during thestudy period from April 2002 to March 2010. The results of the study, by **Nageswari and Selvam (2012[B5]),** were used in the study, for the purpose of analyzing the day of the week effect. The Table shows that the mean returns of BSE sensex index were positive, for all trading days and they were higher (0.1619) on Friday and lower (0.0169) on Monday. The Standard Deviation of returns was the highest (2.0891) on Monday and the lowest (1.5495) on Thursday. This meant that the BSE Sensex Index was more volatile on Monday and less volatile on Thursday. Therefore, the Day Trader could gain from such volatility. The Skewness of returns distribution was found to be positive for Monday and Tuesday while it was negative for the remaining days of the week. The Peak of the return distribution indicated that it was Leptokurtic, for all trading days of the week. It implied that majority of the return series were close to the mean.

Chart-2.1 describes the average returns of BSE Sensex Index, for the periodfrom April 2002 to March 2010. According to the Chart, the mean returns were positive, for all days in the week, highest being on Friday and lowest on Monday, for BSE Sensex Index.

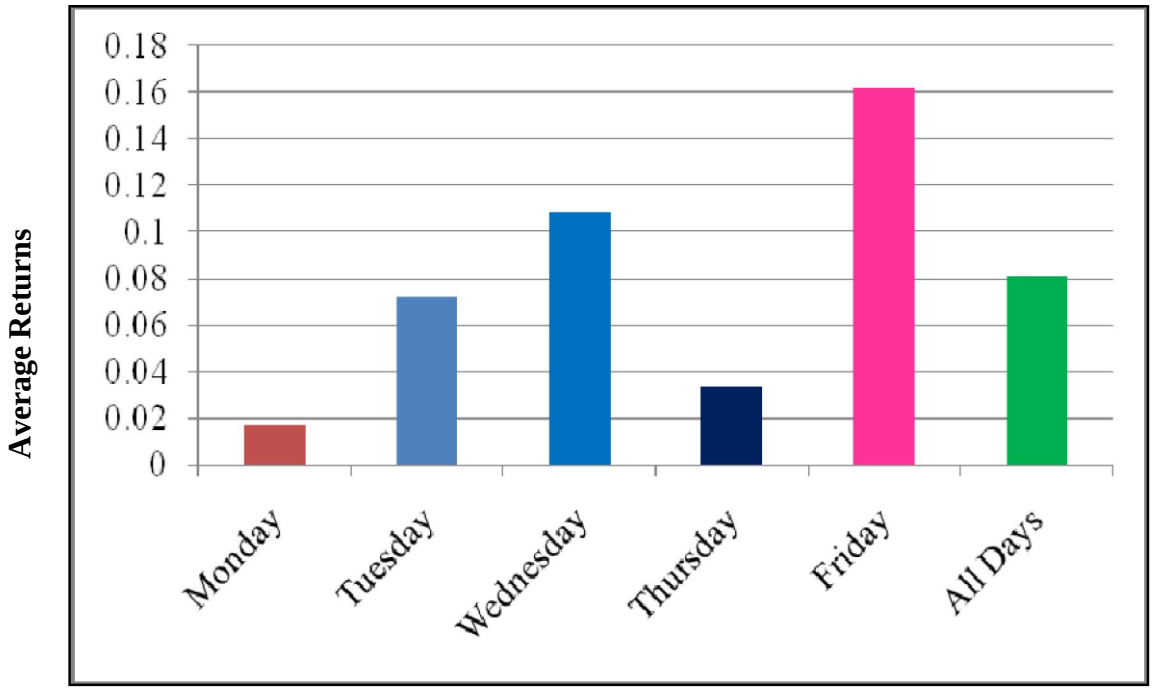
Table-2.11

The Results of Descriptive Statistics for BSE Sensex Index Daily Returns on the whole study period from April 2002 to March 2010

Weekdays	Monday	Tuesday	Wednesday	Thursday	Friday	All Days
Mean	0.0169	0.0724	0.1083	0.0337	**0.1619**	0.0808
Median	0.1894	0.0792	0.0971	0.1606	0.2384	0.1601
Maximum	15.99	7.9311	5.7722	6.667	7.9005	15.9900
Minimum	-11.8092	-6.8389	-7.5231	-7.0033	-11.604	-11.8092
Std. Dev.	2.0891	1.5595	1.5971	1.5495	1.8497	1.7359
Skewness	0.3654	0.1068	-0.2279	-0.2639	-0.6915	-0.1020
Kurtosis	14.3671	6.7334	5.7426	5.5018	8.7573	10.5277
Jarque-Bera	2146.19	231.9	128.82	107.6	574.1	4713.8720
Probability	0	0	0	0	0	0
Observations	397	398	400	395	393	1983

SOURCE:Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

Chart-2.1
Average Returns of Trading Days of the Week for BSE Sensex Index
Daily Returns from April 2002 to March 2010



Source: Compiled from **Table-2.11.**

2.2.1.2. Month Effect

a) Analysis of Descriptive Statistics for BSE Sensex (Month Effect)

The analysis of Descriptive Statistics, for BSE Sensex returns (year wise analysis), from April 2002 to March 2010, is given in **Table-2.12**. The results of the study, by **Nageswari and Selvam (2012[B5]),** were used in the study for the purpose of analyzing the month effect. The Table clearly reveals that the mean returns, differed from year to year. In 2002-03, negative returns were recorded in the Months of January, March, April, May, July, September and October but it was different in January, February, March and April of 2003-04. The study recorded the highest mean return (**1.2443**) for the Month of May in the 2009-10 and the lowest/ negative mean return (**-1.3650)** for the Month of October in 2008-09. The returns of December were positive for all the years and the returns for the Month of January were negative, for the entire period, except 2005-06 and 2006-07.

Table – 2.12

The Results of Descriptive Statistics for BSE Sensex - Month Effect from April 2002 to March2010

Year	Statistics	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2002-03	**Mean**	-0.1665	0.0536	-0.3712	-0.2257	-0.2989	0.1868	-0.3589	0.2990	-0.3077	-0.0674	**0.4765**	0.2141
	Std. Dev.	0.7101	0.7912	1.1211	0.9899	1.5428	1.1651	1.0755	0.9082	0.8182	0.9666	0.6756	0.8405
	Skewness	0.0498	0.5651	0.3064	-0.3610	0.8965	0.3988	-0.4806	-0.3504	0.0399	0.5426	0.0405	0.3407
	Kurtosis	1.5805	2.8566	3.1630	2.0490	5.5792	2.0477	2.2854	3.4848	1.9789	2.6975	1.7910	3.3433
	Jarque-Bera	1.9405	1.0276	0.3350	1.2473	9.0446	1.2859	1.3748	0.6355	0.8743	1.1104	1.1623	0.5094
	Probability	0.3790	0.5982	0.8458	0.5360	0.0109	0.5257	0.5029	0.7278	0.6459	0.5740	0.5592	0.7752
	Observations	23	19	20	21	22	20	23	21	20	21	19	21
2003-04	**Mean**	-0.1183	-0.0261	-0.0621	-0.1480	0.3429	0.5990	0.2180	0.5631	0.2180	0.4218	0.1386	**0.6645**
	Std. Dev.	2.0483	1.5039	1.4501	1.2228	0.7172	1.0146	1.0375	1.3637	1.6858	1.4387	1.3057	0.9024
	Skewness	0.3150	-0.2473	-0.2923	-0.8810	0.2649	-0.1871	-0.0734	-0.5164	-0.2536	-0.4734	0.4392	-0.6223
	Kurtosis	1.9040	2.5032	2.6124	3.5636	1.8662	2.9554	3.1877	4.5004	1.7287	2.1764	2.4642	3.9012
	Jarque-Bera	1.3983	0.3891	0.4509	2.8522	1.3703	0.1242	0.0544	2.7648	1.7172	1.5092	0.8822	2.1645
	Probability	0.4970	0.8232	0.7981	0.2403	0.5040	0.9398	0.9732	0.2510	0.4238	0.4702	0.6433	0.3388
	Observations	21	19	22	20	21	21	23	20	22	23	20	22
2004-05	**Mean**	-0.0374	0.1190	-0.1522	0.0573	-0.8209	0.0341	0.3421	0.0191	0.3305	0.0788	**0.4724**	0.2496
	Std. Dev.	1.5365	0.7984	1.0243	1.3042	3.8796	1.3646	1.0546	0.9187	0.7276	0.8986	0.6878	0.7666
	Skewness	0.0457	0.7412	-0.1009	-0.6646	-0.6829	-0.3317	-0.5569	0.1847	-0.4283	0.3902	0.1204	-0.3043
	Kurtosis	2.2307	3.6155	2.4086	5.0012	5.1267	1.7827	2.9974	2.1136	2.8257	1.7930	3.3621	2.2267
	Jarque-Bera	0.4751	2.1471	0.3579	4.8097	5.5899	1.7617	1.1371	0.8454	0.7004	1.7216	0.1576	0.9281
	Probability	0.7886	0.3418	0.8362	0.0903	0.0611	0.4144	0.5664	0.6553	0.7046	0.4228	0.9242	0.6287
	Observations	19	20	22	20	21	22	22	22	22	20	20	23
2005-06	**Mean**	0.2703	0.2337	0.3822	-0.2676	0.3963	0.2994	0.2979	0.1001	0.4807	-0.4494	**0.5379**	0.3046
	Std. Dev.	1.0144	0.9030	0.8803	1.2996	0.6272	0.7623	0.9151	0.9479	1.0975	1.4242	0.9792	1.0889
	Skewness	0.3758	0.2332	-0.5926	-0.4806	-0.3764	-0.5496	-0.7497	-0.3128	-1.2006	0.4248	-0.6127	-0.2513
	Kurtosis	2.1754	3.1828	3.8818	3.0696	2.5252	2.6536	2.9457	2.7256	8.1678	2.2822	2.4099	2.3369
	Jarque-Bera	1.0374	0.1987	2.0004	0.7739	0.7261	1.2730	1.8758	0.4278	28.4131	1.0310	1.5416	0.6346
	Probability	0.5953	0.9054	0.3678	0.6791	0.6955	0.5291	0.3914	0.8074	0.0000	0.5972	0.4626	0.7281
	Observations	20	19	22	20	22	23	20	22	21	20	20	22

Continued…

Table 2.12 Continued…

Year	Statistics	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
2006-07	**Mean**	0.1091	-0.4492	0.0491	0.3634	-0.6672	0.0872	0.0600	**0.3871**	0.2979	0.1997	0.2505	0.0330
	Std. Dev.	1.1615	1.5439	1.9517	1.6413	2.5535	3.2473	1.9656	0.6662	1.0567	0.9413	**0.5848**	1.4798
	Skewness	0.7464	-0.5005	-0.2041	-0.2192	-0.7808	0.3025	-0.0888	0.2514	-1.5346	0.2724	-0.5901	-0.8798
	Kurtosis	3.4234	3.2446	2.4883	2.0553	2.9810	2.1098	2.0346	2.5469	6.4565	1.8859	3.6806	3.0215
	Jarque-Bera	2.0065	0.8407	0.3749	0.8135	2.2356	1.1104	0.8432	0.4200	18.6964	1.2815	1.7012	2.5803
	Probability	0.3667	0.6568	0.8291	0.6658	0.3270	0.5740	0.6560	0.8106	0.0001	0.5269	0.4272	0.2752
	Observations	20	19	21	18	22	23	21	22	21	20	22	20
2007-08	**Mean**	-0.6057	-0.0189	-0.6476	0.2971	0.2253	0.0346	0.2711	-0.0684	0.6056	**0.6246**	-0.1101	0.2453
	Std. Dev.	2.8861	2.3223	3.2090	1.6842	0.8049	0.8187	1.0716	2.0047	1.0395	2.3386	1.7272	1.4869
	Skewness	0.1196	-0.1257	-0.1084	-1.3730	-0.0266	-0.2191	-1.8219	-0.6756	1.8960	0.1177	0.7451	-0.5904
	Kurtosis	4.4581	2.7538	2.4255	5.4990	1.7941	3.1529	8.1202	2.6563	7.2923	2.2808	4.0208	5.2680
	Jarque-Bera	2.0923	0.1083	0.2828	11.4876	1.2749	0.1885	36.2029	1.7818	27.3365	0.5250	2.9905	5.1758
	Probability	0.3513	0.9473	0.8682	0.0032	0.5286	0.9101	0.0000	0.4103	0.0000	0.7691	0.2242	0.0752
	Observations	23	21	18	20	21	21	22	22	20	22	22	19
2008-09	**Mean**	-0.1170	-0.3062	0.4395	**0.4993**	-0.2587	-0.9447	0.2796	0.0722	-0.5925	**-1.3650**	-0.4094	0.2819
	Std. Dev.	2.9668	1.8834	2.6066	1.4014	1.3050	1.9294	3.3037	1.7308	2.5020	**5.1916**	3.8501	2.5267
	Skewness	-0.6697	-0.3176	-0.1683	-0.5718	0.3545	0.0889	0.0396	0.1710	0.7893	0.1532	0.2367	0.5271
	Kurtosis	2.9518	2.4108	2.5410	3.4299	1.9709	1.8748	1.8401	2.4544	2.8769	2.3249	1.8856	2.3854
	Jarque-Bera	1.4970	0.5942	0.2700	1.2440	1.3014	1.1356	1.2952	0.3455	2.1937	0.4580	1.0995	1.3031
	Probability	0.4731	0.7430	0.8737	0.5369	0.5217	0.5668	0.5233	0.8414	0.3339	0.7953	0.5771	0.5212
	Observations	20	19	20	20	20	21	23	20	21	20	18	21
2009-10	**Mean**	-0.3446	0.0218	0.3081	0.9465	**1.2443**	-0.0410	0.3393	-0.0011	0.4456	-0.3728	0.3139	0.1492
	Std. Dev.	0.9792	1.1514	0.6820	2.1226	4.2006	1.7463	2.2075	1.7844	0.8984	1.0753	1.5670	1.0122
	Skewness	-1.4603	-0.4397	0.6173	-0.5039	2.2868	-0.0017	-0.8753	-0.3751	0.2250	0.5304	-0.2669	1.3044
	Kurtosis	4.5340	2.9442	3.7685	2.6906	8.6674	2.2284	4.1293	2.8687	2.0219	3.2494	2.7462	4.9809
	Jarque-Bera	8.6153	0.6470	1.8503	0.7872	44.1978	0.5457	4.1589	0.5074	0.9661	0.9896	0.2912	9.3888
	Probability	0.0135	0.7236	0.3965	0.6746	0.0000	0.7612	0.1250	0.7759	0.6169	0.6097	0.8645	0.0091
	Observations	19	20	21	17	20	22	23	21	20	20	20	21

SOURCE:Nageswari and Selvam (2012)[B5] **,** Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

According to the Table, the highest standard deviation was recorded in October 2008-09, with high negative mean return and the least standard deviation was registered in November of 2006-07, during the study period. The monthly return distribution was positively skewed, in some months of the year and negatively skewed, for the remaining months, for all years. The result of kurtosis measure (month wise return distribution) indicated Platykurtic, for all months of the year, except May of 2002-03. In the year 2003-04, the return distribution was Platykurtic, for all months of the year. In April and May 2004-05, the returns were Leptokurtic.

Table-2.13 shows the results of Descriptive Statistics (monthly returns), forBSE Sensex Index, during the whole study period from 1st April 2002 to31st March 2010. The results of the study by **Nageswari and Selvam (2012[B5]),** were used in the study, for the purpose of analyzing the month effect. The Table clearly indicates that the highest mean return (0.2718) was recorded in December, with the lowest value of Standard Deviation recorded at 1.3443. This implied inverse relationship between the risk and returns, during the study period. Months of January, February and October witnessed negative mean returns. The possible reason for this was that February and March were the months in which income tax is assessed and paid. Investors sell the scrips before the Month of March, to settle their tax dues. This could possibly create a bearish trend, pushing the share prices down and the same is closely related to the Tax-Loss Selling Hypothesis. In April, investors again start buying the shares.

The Month of April exerted pressure on the stock prices and higher return resulted in April every year. Further, Months of November and December recorded reasonably high returns. All companies in India normally pay a bonus, to employees, in the Months of November and December, depending upon the type of organization. Government jobs, company jobs and even domestic or labour intensive jobs accommodate bonus in their pay structure. Logically, if investors want to sell their holdings, these two months (November and December) could be considered as the best period.

The highest value (2.3808) of Standard Deviation was registered in May and the lowest value (1.3443) of Standard Deviation was recorded in December. This indicated that the market (BSE) was more volatile in the Month of May and it was least volatile in the Month of December. The analysis of the above Table also showed that the highest maximum mean returns (15.99) was recorded in the Month of May while the lowest and minimum value (3.62) was recorded in August. It is to be noted that the highest observation (trading days) was registered in July and the lowest observation, in February and April, during the study period.

Table – 2.13

The Results of Descriptive Statistics for BSE Sensex Month Effect on the whole study period from April 2002 to March 2010

Month	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability	Observation
January	-0.1349	-0.0807	6.4092	-7.6957	1.8496	-0.3910	6.2482	76.74*	0.0000	165
February	-0.0447	0.0015	4.7105	-4.8930	1.4486	-0.3801	4.3107	14.92*	0.0006	156
March	0.0054	0.1493	5.8931	-6.2240	1.7684	-0.3828	5.0222	32.34*	0.0000	166
April	0.1709	0.2373	4.4138	-4.8328	1.4904	-0.3365	3.7294	6.40*	0.0407	156
May	0.0111	0.1812	15.9900	-11.8092	2.3808	1.0446	18.1991	1657.45*	0.0000	169
June	0.0343	0.1393	6.6670	-4.8397	1.7241	0.0719	4.3949	14.17*	0.0008	173
July	0.1791	0.2349	5.7722	-6.0084	1.7613	-0.1995	4.5716	19.39*	0.0001	177
August	0.1682	0.3212	3.6209	-4.3789	1.3541	-0.5550	4.2365	19.56*	0.0001	170
September	0.1847	0.2807	5.3139	-3.9419	1.3798	-0.1224	4.6858	20.19*	0.0000	167
October	-0.0973	-0.0461	7.9005	-11.6044	2.2564	-0.6564	8.4323	216.03*	0.0000	166
November	0.2114	0.3310	5.5805	-6.8389	1.6783	-0.2717	6.2081	71.02*	0.0000	161
December	0.2718	0.2822	5.3672	-3.9172	1.3443	0.1824	5.2850	37.70*	0.0000	169

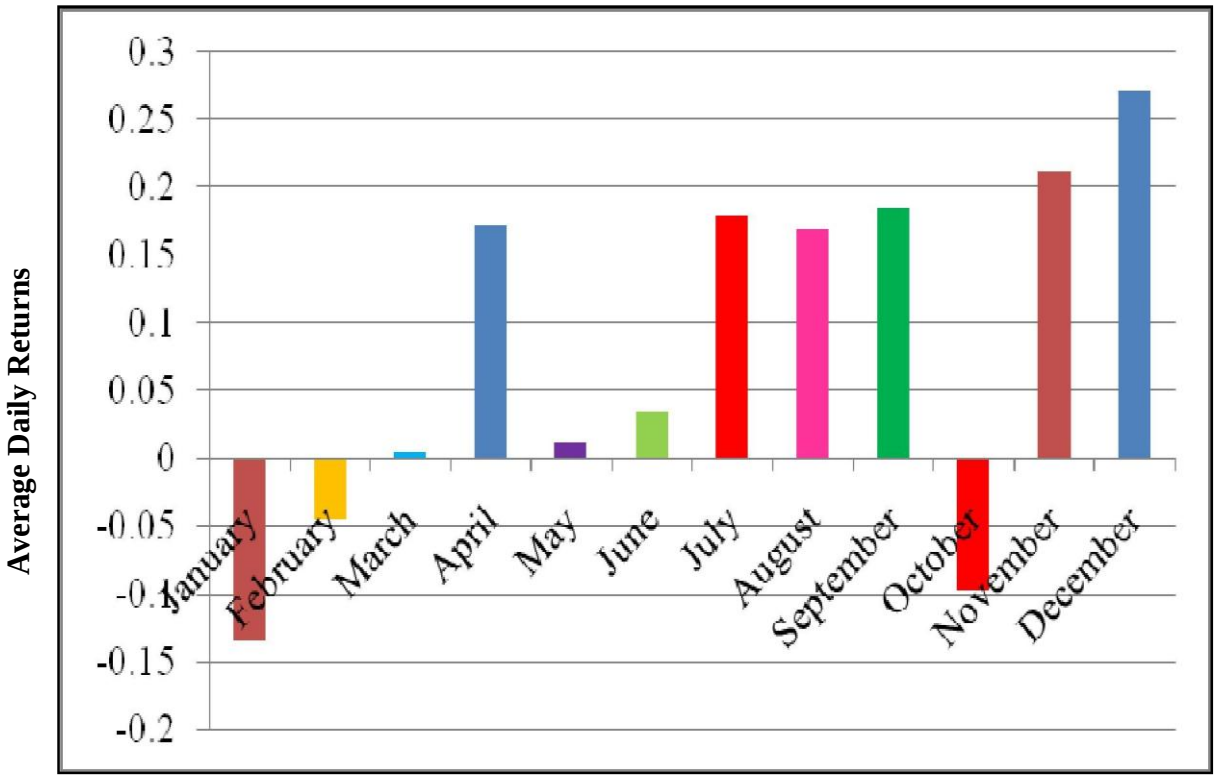
SOURCE:Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

*Significant at 1% level

According to the analysis of skewness, the month wise return distribution was positively skewed in the months of May, June and December and negatively skewed for all other months of the year. The Peak of the return distribution was Leptokurtic for all months of the year and it was the highest (18.19) for the Month of May. The Jarque- Bera Test indicated that the series were not normally distributed.

The average month wise returns, for BSE Sensex Index, during the study period from April 2002 to March 2010, are exhibited in **Chart-2.2.** It is observed that in respect of BSE Sensex Index, negative mean returns were recorded in the months of January, February and October and positive mean returns were earned for the remaining months of the year. According to the Chart, the highest mean return was recorded for the Month of December and the most negative mean return was registered in the Month of January, during the study period.

Chart-2.2
Average Daily Returns – Month Effect for S&P CNX 500 Index from April 2002 to March 2010



Source: Compiled from **Table-2.13.**

2.2.1.3. Semi Month and Turn of the Month Effect

a) Analysis of Descriptive Statistics for S&P CNX Nifty Index (Semi Month Effect)

The Descriptive Statistics of the Turn of Month returns, in S&P CNX Nifty Index, from April 2002 to March 2010, is presented in **Table-2.14**. The results of the study, by **Nageswari and Selvam (2012[B5]),**were used in the study, for the purpose of analyzing turn of the month effect. It is found from the Table that the returns of the First Half Month were higher than that of the Second Half, for all years. For the year 2008-09, negative returns were reported for both First and Second Half Month Returns. The Second Half Month of 2002-03 and 2004-05 earned negative return. The Standard Deviation of the First Half was lower than that of Second Half, in all years and the highest was recorded in 2008-09. The result of kurtosis measure of return distribution was Platykurtic for all years, except Second Half of 2004-05 and 2009-10. Negative value was reported for the First Half of 2005-06 and 2008-09. The return distribution was negatively skewed, for both First and Second Half Month Returns, in all the years, except 2009-10.

Table-2.14

The Results of Descriptive Statistics for S&P CNX Nifty Index (Turn of the Month wise) from April 2002 to March 2010

Year	Statistics	Mean	S.D	Kurtosis	Skewness	Count
2002-03	**First half**	0.0640	0.9532	0.0788	-0.1557	62
	Second half	-0.0931	0.9997	1.0294	0.1631	191
2003-04	**First half**	**0.6301**	1.1713	0.2365	-0.3076	60
	Second half	0.1114	1.4863	0.0419	-0.2775	194
2004-05	**First half**	0.4572	1.4314	3.0893	-1.3253	60
	Second half	-0.0702	1.6857	22.4932	-2.4457	193
2005-06	**First half**	0.3534	0.9704	-0.3125	-0.3498	60
	Second half	0.1579	1.0549	1.0671	-0.6919	191
2006-07	**First half**	0.1285	1.5680	2.1325	-0.5389	60
	Second half	0.0207	1.8410	1.5693	-0.4509	189
2007-08	**First half**	0.1021	1.7217	2.4928	-1.2791	60
	Second half	0.0801	2.1164	2.8095	-0.3640	191
2008-09	**First half**	-0.0862	2.6505	-0.1249	0.0997	60
	Second half	-0.2172	**2.6755**	2.4627	-0.4982	183
2009-10	**First half**	0.5365	1.5887	1.2275	0.2623	58
	Second half	0.1367	1.9679	24.5482	2.8642	184

SOURCE: **Nageswari and Selvam (2012[B5]),** Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

Table-2.15 presents the results of Descriptive Statistics, for S&P CNX NiftyIndex Returns, from April 2002 to March 2010. The results of the study, by **Nageswari and Selvam (2012[B5]),**were used in the study, for the purpose of analyzing the turn of the month effect. The Table reveals that the highest mean return (0.2712) was recorded for the First Half Month. Hence it is suggested that investors may buy the shares, during the Second Half Month Period, which was low, because it will give better returns to the investors. The highest value (1.7976) of Standard Deviation was recorded in the Second Half Month and the Lowest Value (1.5950) of Standard Deviation was recorded in the First Half Month. It implied that the stock market in India was more volatile in Second Half Months and least volatile for First Half Months. The peak of return distribution was Platykurtic, for the First Half and Leptokurtic, for the Second Half Month and it was the highest (9.79) in the Second Half of the return series. The return was negatively skewed, for both First and Second Half Month returns, during the study period.

Table-2.15

The Results of Descriptive Statistics for S&P CNX Nifty Index Daily Returns - 'Turn of the Month wise' on the whole study period from April 2002 to March 2010

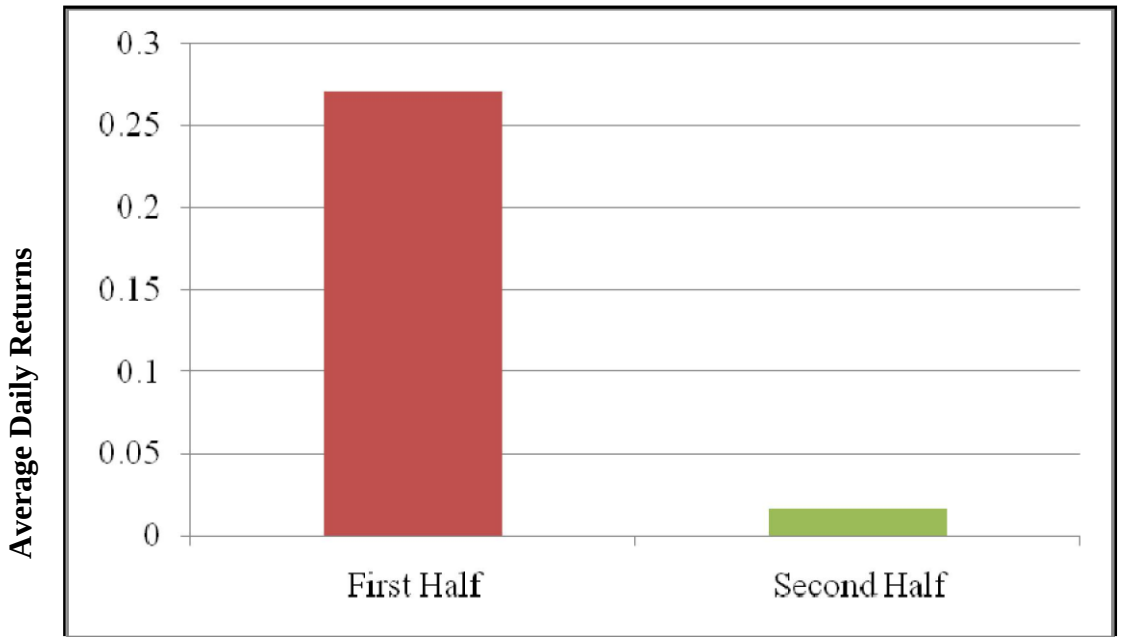
Statistics	First Half	Second Half
Mean	0.2712	0.0165
Standard Deviation	1.5950	1.7976
Kurtosis	2.3191	9.7976
Skewness	-0.4905	-0.2211
Observations	480	1516

SOURCE:Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

The average returns of First Half Month returns, for S&P CNX Nifty Index, from April 2002 to March 2010, are given in **Chart-2.3.** It is observed that in respect of S&P CNX Nifty Index, the highest mean return was recorded in the First Half Month and the lowest mean return was recorded, in the rest of the days of the Month.

Chart-2.3

Average Daily Returns – 'Turn of the Month Wise' for S&P CNX Nifty Index from April 2002 to March 2010



Source: Compiled from **Table-2.15.**

2.2.1.4. Holiday Effect

a) Analysis of Descriptive Statistics for BSE Sensex (Holiday Effect)

From the examination of the **Table-2.16,** it is clear that the minimum average return was recorded on Weekdays and maximum return was registered on Pre-Holidays. The results,obtained by **Nageswari and Selvam (2012[B5]),**were used in the study, for the purpose of analyzing the holiday effect. The highest standard Deviation (2.1097) was recorded in Post-Holidays and the lowest Standard Deviation (1.5404) was recorded for Weekdays, during the study period. It implied that the stock market (namely, BSE) was more volatile during Post Holidays and least volatile on Weekdays. The reasons, for high Pre-Holidays returns, may be due to psychological reasons/beliefs of investors.

Table-2.17 demonstrates the results of Linear Regression, for BSE Sensex Index,from April 2002 to March 2010. The results of the study, by **Nageswari and Selvam (2012[B5]),**were used in the study, for the purpose of analyzing the holiday effect.

Table-2.16
The Results of Descriptive Statistics for BSE Sensex Index Daily Returns for Pre, Post-Holidays and Weekdays from April 2002 to March 2010

Trading Days	N	Mean	Std. Deviation	Std. Error Mean
Pre-holidays	432	**0.2137**	1.7491	0.0842
Post-holidays	471	0.0525	**2.1097**	0.0972
Weekdays	1092	0.0404	1.5404	0.0466

SOURCE:Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19))

Table-2.17
The Results of Linear Regression Model for S&P CNX 500 Index Daily Returns for Pre, Post-Holidays and Weekdays from April 2002 to March 2010

Trading days	Coefficients	Std. Error	t- Stat	P-value
Intercept	**0.2185**	0.0825	2.6471	0.0082*
Post-holidays	-0.1769	0.1143	-1.5481	0.1218
Weekdays	-0.1666	0.0974	-1.7107	0.0873
R Square	0.0017	**F-statistic**		1.6663
Adjusted R sq.	0.0007	**P- value**		0.1892

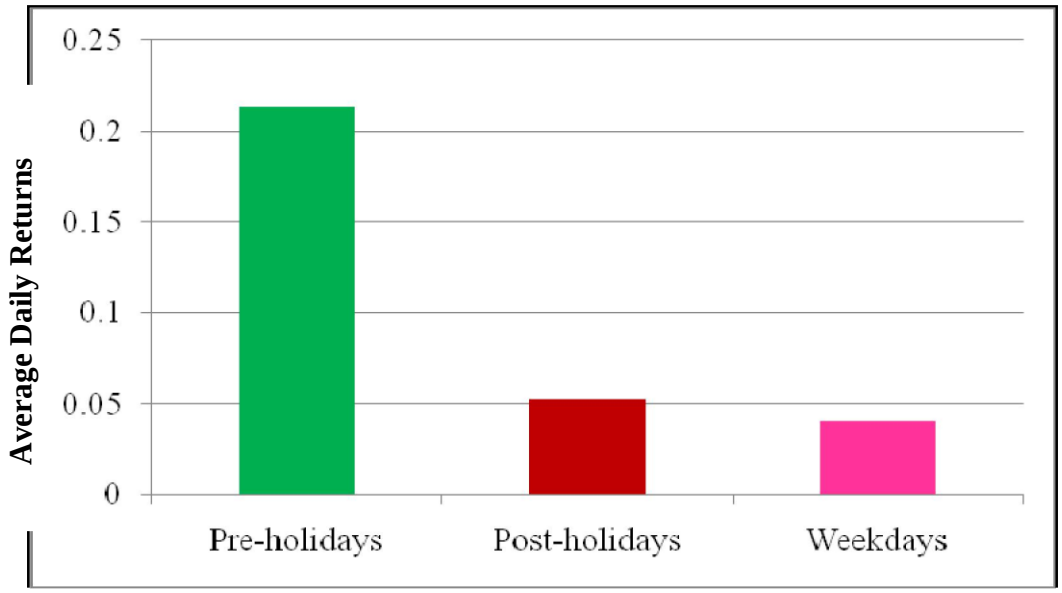
SOURCE: Nageswari and Selvam (2012[B5]), Calendar Anomalies, Lambert Academic Publishing, Germany (Originally Collected from PROWESS Corporate Database and Computed using SPSS (Version 19)

* Significant at 1% level

The Table clearly shows that the coefficients of Post-Holidays (-0.1769) and Weekdays returns (-0.1666) were negative and also insignificant, during the study period. The Pre-Holiday return was higher than that of Post-Holidays and Weekdays and statistically significant at 1% level. However, the insignificant F-value (1.6663) did not confirm the Pre-Holiday Effect, during the study period.

Chart-2.4 gives the diagrammatic representation of the Average Daily Returns,during Pre-Holidays, Post-Holidays and Weekdays, for BSE Sensex Index, from April 2002 to March 2010. The Chart clearly shows that the highest mean return was recorded during Pre-Holidays and lowest mean return was recorded on Weekdays, during the study period.The market value performance of the firm, during market anomalies, was assessed by observing the index movement, with the analysis of **Tables (2.10 to 2.17)** and itclearly indicated that the null hypothesis (**NH-2.3.1**), **"there is no significant change in the market value performance of firms during calendar anomalies,** is accepted.**Table - 2.18** shows the details about testing of hypotheses relating to market value performance of firms.

Chart-2.4
Average Daily Returns of Pre, Post-Holidays and Weekdays for BSE Sensex from April 2002 to March 2010



Source: Compiled from **Table-2.16**

Table-2.18
Testing of Hypotheses relating to Market Value Performance of Firms

Hypothesis		Remarks
Index Movement – Market Efficiency		
NH-2.1.1	There is no stationarity in the returns of BSE Sectoral Indices	Rejected
NH-2.1.2	There is no random distribution in the returns of BSE Sectoral Indices	Partially Accepted
NH-2.1.3	There is no weak form efficiency in the returns of BSE Sectoral Indices	Accepted
NH-2.1.4	There is no volatility in the returns of BSE Sectoral Indices	Partially Accepted
Index Movement – Event Study		
NH-2.2.1	There is no significant change in the market value performance of firms in respect of event announcements	Accepted
Index Movement – Market Anomalies		
NH-2.3.1	There is no significant change in the market value performance during calendar anomalies	Accepted

Source: Developed by author from **Table – 2.2 to 2.5, 2.7 to 2.8 and 2.10 to 2.17**

2.3. Sum up of the Market Value Performance

The present Chapter analyzed the market value performance of firms, by testing conformity and deviations, from the Efficient Market Hypothesis. As pointed out earlier, the market value performance of firms was studied by analyzing the performance of firm, with respect to the stock and index, confirming the assumptions of Efficient Market Hypothesis and deviating from the assumptions of Efficient Market Hypothesis i.e., Calendar Anomalies. This study analyzed six sample indices, namely, BSE Automobile, BSE Bankex, BSE Health Care, BSE Information Technology, BSE Metal and BSE Power. Among the six, two indices, namely, BSE Bankex and BSE Metal recorded significant change in the market value performance since it confirmed the weak form of Efficient Market Hypothesis. With regard to semi strong form of Efficient Market Hypothesis, it is found that there was no significant change in the market value performance of firms. The examination of deviations from Efficient Market Hypothesis, using calendar anomalies, revealed that there was no significant change in the market value performance. From the overall analysis of this Chapter, it is clear that stock index performance is the reflection of firm performance **(Selvam, 2016$_b$[B13])**. The next chapter proposes to analyse the stakeholders satisfaction on the performance of firm.

3.0. Stakeholders' Satisfaction on the Performance of Sample Firms

In the Second Chapter of this study, the market value performance, in respect of index movements on three dimensions, by applying market efficiency, event study and market anomalies, was studied. An attempt has been made in this Chapter to study stakeholders' satisfaction, on the performance of firms, in terms of satisfaction of investors (investors' sentiment), customers' service loyalty and service efficiency.

The performance of firms is of vital importance, for different stakeholders and economy at large. For investors, the return on their investments is highly valuable and a well performing business can bring high and long-term returns for their investors. Furthermore, financial profitability of a firm will boost the income of its employees, bring better quality products for its customers, and have better environment friendly production units **(Selvam, 2016$_c^{B14}$)**.

Performance measurement systems, integrating multi dimensions, play a key role in developing a strategy, evaluating the achievement of organizational objectives and compensating the managers. The measurement system of majority of companies lay too much emphasis on financial measures such as earnings and accounting returns and little emphasis on the drivers of value such as customer and employee satisfaction, innovation and quality. Financial evaluation systems generally focus on annual or short-term performance against accounting yardsticks. They do not deal with progress, relative to customer requirements or competitors, nor other non-financial objectives that may be important in achieving profitability, competitive strength and longer term strategic goals. For example, new product development or expanding organizational capabilities may be important strategic goals, but may hinder short-term accounting performance **(Selvam, 2016$_c^{B14}$)**.

These non-financial measures like "intangible assets" such as intellectual capital and customer loyalty, rather than "hard assets", allowed on to balance sheets, are drivers of success in many industries. Although it is difficult to quantify intangible assets in financial terms, non-financial data can provide indirect indicators of a firm's intangible assets **(Selvam, 2016$_c^{B14}$)**.

Many studies have been conducted, to determine various financial and non-financial factors, that can boost or have an adverse effect on the performance of firm. But still no single effective model has been established which captures maximum variation.

In this study, an integrated examination of firm performance, in respect of product/service, has been attempted. The present Chapter aims to analyze the firm performance, in terms of satisfaction of shareholders (investors' sentiment), customer loyalty and service efficiency. Hence the analysis of stakeholders' satisfaction on the service/products of firms, has beenmade as follows:

3.1. Section-A: Satisfaction of Investors (Investors Sentiments)

3.2. Section-B: Customer Service Loyalty and

3.3. Section-C: Service Efficiency **(Selvam, 2016$_c$[B14]).**

3.1. SECTION-A: SATISFACTION OF INVESTORS (INVESTORS SENTIMENTS)

The investor has a direct and indirect influence on the firm's performance, through participation in stock market and mutual fund investment. This fact was confirmed, from the findings of the study that mutual fund schemes were popular among all segments of population, with different educational backgrounds (**Selvam, 2013[B7]).** The question raises whether investors satisfaction is the part of firm performance and foremost importance because the investors sentiment can lead to market bubbles, followed by massive devaluations, resulting in severe market pricing errors **(Brown and Cliff, 2004).** Two large stock market crashes during the last decade, i.e. the tech bubble crash in 2000 and the real estate bubble crash in 2008, underline the severe consequences of investor sentiment on asset prices. In addition, several research studies have shown that there are profitable trading strategies, that take advantage of stock price movements, caused by investors' sentiment **(Fisher and Statman, 2000; Baker and Wurgler, 2000).** However, most of the research studies on investors' sentiment focus on the U.S. stock market and rely on the notion that it is mainly retail investors who are affected by sentiment waves and who cause stock prices to drift away from their fundamental values **(Kumar and Lee, 2006).** The influence of stock market returns on sentiments is stronger than vice versa (**Bennet and Selvam, 2011[A19]; Bennet et al., 2011$_a$[A20]).** These studies implicitly assume that institutional investors are more rational in their trading behavior whereas

retail investors are responsible for the impact of investors' sentiment on markets. Therefore, it is important to test/measure investors sentiment which is considered as the best measure for stock price performance in the market **(Selvam, 2016$_c^{B14}$)**.

Measurement of the Investors' Sentiments (Variables)

The present section addresses the issue, by providing sample evidence, in regards to the impact of investor sentiment on the Indian stock market. Investors' Sentiment is defined as investors' attitude and opinion towards investing in the stocks (**Bennet et al., 2011$_c^{A22}$; Bennet et al., 2012^{A23}).** According to **Shiller's (2003)** approach, there are three aspects of Investors' Sentiment as follows: These three aspects are taken as dependent variables for this study.

1. Investors' Optimism (IO)
2. Investors' Participation (IP),
3. Investors' Stock Market Outlook (ISMO)

According to **Bennet and Selvam (2013^{B6}),** the investor sentiment (in respect of Investors' Optimism, Investors' Participation and Investors' Stock Market Outlook) was tested in relation to stock specific factors, as these factors reflect the performance of firms better in the mind of investors. Hence it was decided to discuss the results of stock specific factors, as found by **Bennet and Selvam (2013^{B6}).** Besides, the stock specific factors had a significant impact on the investors sentiment (**Bennet et al., 2011$_c^{A22}$)**. The objective of examining the influence of stock specific factors on investors' sentiments was tested with the help of hypotheses (**NH 3.1 to NH 3.27**). The hypothesis statements, are given in detail, in the methodology part of **Chapter-1**.

Analysis of Investors' Satisfaction in relation to Stock Specific Factors and Testing of Hypotheses

The analysis of investors' satisfaction (investors' sentiment), in respect of stock specific factors, was divided as follows:

3.1.1. Investors Optimism, Investors Participation and Stock Market Outlook

3.1.2. Bootstrap Summary for Stock Specific Factors and Investor Optimism - Testing of Hypotheses

31.3. Bootstrap Summary for stock Specific Factors & Investor Participation - Testing of Hypotheses, and

3.1.4. Bootstrap Summary for Stock Specific Factors & Investor Stock Market Outlook-Testing of Hypotheses.

3.1.1. Investors Optimism, Investors Participation and Stock Market Outlook

Table – 3.1 displays the results of Descriptive Statistics of DependentVariable (Investors Optimism, Investor Participation and Investor Stock market Outlook). The sample investors responded to a statement that in India, the stock prices will rise for the next 12 months. It is understood that the respondents slightly agreed to this statement, with a mean value of 4.60 and with Standard Deviation of 1.795. When the respondents were asked to respond to a statement that if the Nifty/Sensex points dropped by 3% tomorrow and if it would recover most of its losses in a few days, they were confident that it would recover soon. The mean value was of 5.70, with standard deviation value of 1.876.

In order to study the Perception of Investors, the respondents were asked to respond to a statement that 'they will stay invested in the Indian Stock Market'. They neither agreed nor disagreed, with a mean value of 3.73 and standard deviation value of 2.169. But the respondents slightly agreed that they would increase their investment in the Indian Stock Market, in the next 12 months, with a mean value of 4.67 and standard deviation value of 1.968. In respect of Stock Market operation, the respondents were also asked to answer the statement that in India, most stocks are overvalued relative to their fundamental value, they slightly concurred with that statement (mean value of 4.63, Standard Deviation of 1.946). When they were asked to respond to a statement that there would be a major stock market correction in India in the next 12 months, they neither agreed nor disagreed with that statement, with a mean value of 4.03 and with a standard deviation value of 1.886.

It is to be noted that nine factors were covered by various Stock Specific Factors, namely, Financial Characteristics (FC), Psychological Factors (PF), Quality of Management (QM), Expected Events surrounding the stock and the Book Value, Recommendation of the Financial Community (RCF), Price Cut-off Rules (PCF), Who else is Buying (WEB)?, Past Price Performance and Sector Attractiveness (PPPSA) and Price Earnings Ratio and Familiarity with the Products and Service (**Bennet and Selvam, 2013[B6]**).

Table - 3.1

Descriptive Statistics for Dependent Variables (Investor Optimism, Investor Participation and Investor Stock Market Outlook)

DependentVariables		N	Mean	Std. Deviation
Measures of Investors Sentiments	**Sub-Factors**			
Investor Optimism (IO)	In India, stock prices will rise for the next 12 months	400	4.60	1.795
	If the Nifty / Sensex points dropped by 3% tomorrow, I would guess that the Nifty / Sensex would recover most of its losses in a few days.	400	5.70	1.876
Investor Participation (IP)	Presently, I will stay invested in the Indian Stock Market	400	3.73	2.169
	I plan to increase my investments in the Indian Stock market in the next 12 months.	400	4.67	1.968
Investor Stock Market Outlook (ISMO)	In India, most stocks are overvalued relative to their fundamental value	400	4.63	1.946
	A major stock market correction could happen in India in the next 12 months	400	4.03	1.886

SOURCE: **Bennet and Selvam (2013[B6]),** Sentiments of Indian Equity Investors, Lambert Academic Publishing, Germany (Originally Collected from Primary Source and Computed from E Views (Version 7)).

The mean and standard deviation values of various factors, representing nine independent variables, are presented in **Table – 3.2.** The mean value of the factor, namely, Expected Price Cut-Off Rules, was the lowest at 3.67 and its standard deviation was 1.548. In other words, sample investor recorded high variation in their views, by agreeing with the price cut-off rule, as the influencing factor.

The factors, representing the variable, Quality of Management, recorded the highest mean values (6.77 and 6.35) and the lowest standard deviation (1.461 and 1.395). Past Price Performance and Sector Attractiveness were the factors, with second highest mean values at 5.98 and 5.65. The mean values of the variable, Financial Characteristics, was greater than 4.51, ranging between 4.51 to 4.86.

Table – 3.2
Descriptive Statistics of Independent Variables: Stock Specific Factors

Independent Variables		N	Mean	Std. Deviation
Stock Specific Factors	**Sub-Factors**			
Price Earnings Ratio and Familiarity with the Products and Services	Price to Earnings Ratio	400	4.97	1.74
	Familiarity with Products and Services	400	5.14	1.734
Financial Characteristics	Dividends per Share	400	4.51	1.857
	Cash Flow per Share	400	4.82	1.805
	Current Assets to Current Liabilities Ratio	400	4.86	1.801
	Turnover Ratio (Accounts Receivable, Inventory Accounts Payable)	400	4.71	1.884
	Interest Coverage Ratio	400	4.75	1.864
	Debt to Equity Ratio	400	4.74	1.886
	Quality of Assets; Return on Assets	400	4.86	1.804
Psychological Factors	Recommended by Friend, Family, Peer	400	4.82	1.713
	Investors' Gut Feeling / Intuition	400	4.69	1.813
	Rumors	400	5.18	1.754
Quality of Management	Industry Sector to which Stock belongs	400	6.35	1.395
	CEO / MD – Track Record, Expertise	400	6.77	1.461
	Quality of Management	400	5.84	1.516
Expected events surrounding the stock and the book value	Book Value	400	4.68	1.863
	Expected Stock Value	400	4.47	1.918
	Potential Takeover Target	400	4.78	1.883
Recommendation of the Financial Community	Recommended by Analyst, Research Reports	400	4.73	1.804
	Recommended by Broker	400	4.84	1.715
	Recommended by Stock Market 'Gurus'	400	6.19	1.459
Price Cut-off Rules	Price Cut-off Rules	400	3.67	1.548
Who Else is Buying?	Insider Buying	400	4.65	1.853
	Major Institutions & Corporations (currently Buying the Stock of the Company)	400	4.66	1.823
Past Price Performance and Sector Attractiveness	The Past Price Performance of the Stock including any Recent Price over Reaction	400	5.98	1.883
	Is the Stock and its Sector viewed as 'Hot'	400	5.65	1.663

SOURCE: **Bennet and Selvam (2013[B6]),** Sentiments of Indian Equity Investors, Lambert AcademicPublishing, Germany (Originally Collected from Primary Source and Computed from E Views (Version 7)).

Similarly, the standard deviation values of the above factor were greater than 1.8, ranging between 1.801 and 1.886.Among the factors, representing psychological variable, Rumors recorded the highest mean value at 5.18, with a standard deviation of 1.754. The factors, namely, Book Value, Expected Stock Value and Potential Takeover Target earned mean values at 4.68, 4.47 and 4.78 respectively. Their standard deviation values were at 1.863, 1.918 and 1.883 respectively.

According to the results of the Table, the factor, Recommended by Stock Market 'gurus', was opined as the most influencing factor, with a mean value of 6.19 as compared to Recommended by Analyst, Research Reports and Broker. The variation, in this view, was less for Recommended by Stock Market 'gurus' (1.459), as compared to the other two.

Sub factors, like Insider Buying and Buying by Major Institutions and Corporations, were given equal weightage by the investors, with mean values of 4.65 and 4.66 respectively and with standard deviation of 1.853 and 1.823 respectively.

It is to be remembered that the investors generally gave more weightage to a factor, namely, Familiarity of the Product and Service, at the mean value of 5.14, which was more than 4.97, relating to price earnings ratio. Their standard deviation values were at1.734 and 1.74 respectively.

3.1.2. Bootstrap Summary for Stock Specific Factors and Investor Optimism - Testing of Hypotheses

Table – 3.3 presents the results of Bootstrap Summary, for various Stock Specific Factors (SSF) and Investor Optimism (IO). The Hypotheses– **3.1.1 to 3.1.9** are related to the relationships between PEFPS, FC, PF, QM, EESS, RCF, PCF, WEB, PPPSA, and the outcome variable of IO. These hypotheses were tested by using PLS-PM Procedure in Visual PLS Software. The result of these hypotheses is given below:

i) Price Earnings Ratio and Familiarity with the Products and Services: Theresults of **Table-3.3,** established the negative relationship between PEFPS and IO. The study proved that it was not statistically significant at 0.05 level (Beta = 0.117 and t= 1.8222). This implied that PEFPS did not influence the Investor Optimism. Hence the null hypothesis ($NH_{3.1.1}$), namely, **there is no relationship between Investors' Optimismand Price Earning Ratio and Familiarity with the Products and Services,** is accepted.

ii) Financial Characteristics: There was positive relationshipbetween FC and IO and it was statistically and negatively significant at 0.05 level (Beta = - 0.0426 and t= -3.4933). This indicates that IO was indirectly influenced by FC and it means that when IO increases, FC decreases and vice versa. Therefore, the null hypothesis ($NH_{3.1.2}$), namely, **there is no relationship between Investors'Optimism and Financial Characteristics,** is rejected (**Table-3.3)**.

iii) Psychological Factors: According to the results of **Table – 3.3,** the path linkingPF to the extent of usage of IO, was found to be positively significant at 0.05 level (Beta = 0.225 and t= 1.9613). This indicated that IO influenced the PF. Hence, the null hypothesis ($NH_{3.1.3}$), namely **there is no relationship between Investors' Optimismand Psychological Factors,** is rejected.

iv) Quality of Management: As revealed in **Table – 3.3,** the relationship betweenQM and IO was found to be positively significant at 0.05 level (Beta = 0.221 and t= 2.5559). This meant that QM influenced the Investor Optimism. Hence the null hypothesis ($NH_{3.1.4}$), viz, **there is no relationship between Investors' Optimism andQuality of Management,** is rejected.

Table – 3.3

Boot Strap Summary for Stock Specific Factors and Investor Optimism

Null Hypothesis	Entire Sample Estimate	Mean of Sub Samples	Standard Error	T-Statistic	R Square Value	Result
$NH_{3.1.1}$	0.117	0.1098	0.0642	1.8222*	**0.512**	Accepted
$NH_{3.1.2}$	**-0.426**	**-0.4181**	**0.1219**	**-3.4933****		**Rejected**
$NH_{3.1.3}$	**0.225**	**0.2485**	**0.1153**	**1.9613****		**Rejected**
$NH_{3.1.4}$	**0.221**	**0.2116**	**0.0865**	**2.5559****		**Rejected**
$NH_{3.1.5}$	**0.305**	**0.3128**	**0.0974**	**3.1327****		**Rejected**
$NH_{3.1.6}$	**0.298**	**0.2946**	**0.0708**	**4.2119****		**Rejected**
$NH_{3.1.7}$	-0.063	-0.067	0.0456	-1.383*		Accepted
$NH_{3.1.8}$	-0.087	-0.0999	0.0637	-1.366*		Accepted
$NH_{3.1.9}$	0.148	0.1419	0.08	1.8504*		Accepted

SOURCE: **Bennet and Selvam (2013[B6]),** Sentiments of Indian Equity Investors, Lambert Academic Publishing, Germany (Originally Collected from Primary Source and Computed from E Views (Version 7)).

* Insignificant; ** Significant at 5% level

Note:

$NH_{3.1.1:}$ There is no relationship between Investors' Optimism and Price Earning Ratio andFamiliarity with the Products and Services.

$NH_{3.1.2:}$ There is no relationship between Investors' Optimism and Financial Characteristics.

$NH_{3.1.3:}$ There is no relationship between Investors' Optimism and Psychological Factors.

$NH_{3.1.4:}$ There is no relationship between Investors' Optimism and Quality of Management.

$NH_{3.1.5:}$ There is no relationship between Investors' Optimism and Expected Events surroundingthe Stock and Book Value.

$NH_{3.1.6:}$ There is no relationship between Investors' Optimism and Recommendation of theFinancial Community.

$NH_{3.1.7:}$ There is no relationship between Investors' Optimism and Price cut off Rules.

$NH_{3.1.8:}$ There is no relationship between Investors' Optimism and who else is Buying.

$NH_{3.1.9:}$ There is no relationship between Investors' Optimism and Past Price Performance and Sector Attractiveness.

v) Expected Events surrounding the Stock and the Book Value: Therelationship between EESS and IO was found to be positively significant at 0.05 level (Beta= 0.305 and t= 3.1327). This implied that EESS highly influenced the Investor Optimism. Therefore, the null hypothesis ($NH_{3.1.5}$), namely, **there is no relationshipbetween Investors' Optimism and Expected Events Surrounding the Stock and Book Value,** is rejected (**Table-3.3)**.

vi) Recommendation of the Financial Community: There was positive relationship between RFC and IO. The study proved that it was statistically significant at 0.05 level (Beta = 0.298 and t= 4.2119). In other words, RFC was positively and highly influenced by the Investor Optimism. Hence, the null hypothesis ($NH_{3.1.6}$), namely, **there is no relationship between Investors' Optimism andRecommendation of the Financial Community,** is rejected. One of the aspects ofinvestor optimism was that the stock's price would rise for the next 12 months, was influenced by Recommendations made by Stock Market Gurus (**Table-3.3)**.

vii) Price Cut off Rules: The path linking PCF, to the extent of usage of IO, was notfound to be significant and it was also negatively related at 0.05 level (Beta = - 0.063 and t= -1.383). This implied that PCF did not influence the extent of usage of IO. Hence, the null hypothesis viz, ($NH_{3.1.7}$), namely, **there is no relationship betweenInvestors' Optimism and Price cut off Rules,** is accepted (**Table-3.3)**.

viii) '**Who Else is Buying?**': As revealed in **Table – 3.3,** the path linking WEB to the extent of usage of IO, was not found to be significant and it was also negatively related at 0.05 level (Beta = - 0.087 and t= -1.366). This indicated that WEB did not influence the extent of usage of IO and it was also negatively related. Therefore, the null hypothesis ($NH_{3.1.8}$), namely, **there is no relationship between Investors'Optimism and Who else is Buying,** is accepted.

ix) Past Price Performance and Sector Attractiveness: The result of the **Table-3.3,** established thenegative relationship between PPPSA and IO. The study proved that it was not statistically significant at 0.05 level (Beta = 0.148, t= 1.8504). In other words, PPPSA did not influence the Investor Optimism. Hence, the null hypothesis ($NH_{3.1.9}$), namely, **there is no relationship between Investors' Optimism and Past PricePerformance & Sector Attractiveness,** is accepted.

3.1.3. Bootstrap Summary for Specific Factors & Investor Participation - Testing of Hypothesis

Table - 3.4 presents the results of bootstrap summary for various stock specific factors (SSF) and investor participation (IP). The null hypotheses - **3.1.10 to 3.1.18** concernthe relationships between PEFPS, FC, PF, QM, EESS, RCF, PCF, WEB, PPPSA, and the outcome variable of IP. These hypotheses were tested, by using PLS-PM Procedure in Visual PLS Software. The results of these hypotheses are given below:

i) Price Earnings Ratio and Familiarity with the Products and Services: There wasnegative relationship between PEFPS and IP. The study proved that it was not statistically significant at 0.05 level (Beta = -0.0280 and t= -0.3950). This implied that PEFPS did not influence Investor Participation. Hence, the null hypothesis ($NH_{3.1.10}$), namely, **there is no relationship between Investors' Participation and Price Earning Ratio and Familiarity with the Products and Services,** is accepted (**Table-3.4)**.

ii) Financial Characteristics: The study in the **Table-3.4** established the positive relationshipbetween FC and IP and proved that it was statistically significant at 0.05 level (Beta = 0.3030 and t= 2.3842). This indicated that IP was directly influenced by FC. Therefore, the null hypothesis ($NH_{3.1.11}$), viz, **there is no relationship between Investors'Participation and Financial Characteristics,** is rejected.

iii) Psychological Factors: According to the results of **Table – 3.4,** the path linkingPF to the extent of usage of IP, was found to be negatively significant at 0.05 level (Beta = 0.0740 and t= 0.9004). In other words, IP was not influenced by PF. Hence, the null hypothesis ($NH_{3.1.12}$), namely, **there is no relationship between Investors' Participationand Psychological Factors,** is accepted.

iv) Quality of Management: As revealed in **Table – 3.4**, the relationship betweenQM and IO was not found to be significant at 0.05 level (Beta = - 0.1240 and t= -1.2378) and it was also negatively related. This implied that QM did not influence the Investor Participation. Hence, the null hypothesis ($NH_{3.1.13}$), viz, **there is no relationship betweenInvestors' Participation and Quality of Management,** is accepted.

Table – 3.4
Boot Strap Summary for Stock Specific Factors and Investor Participation

Null Hypothesis	Entire Sample Estimate	Mean of Sub Samples	Standard Error	T-Statistic	R Square Value	Result
$NH_{3.1.10}$	-0.0280	-0.0997	0.0709	-0.3950*		Accepted
$NH_{3.1.11}$	**0.3030**	**0.2861**	**0.1271**	**2.3842****		**Rejected**
$NH_{3.1.12}$	0.0740	0.1136	0.0822	0.9004*		Accepted
$NH_{3.1.13}$	-0.1240	-0.1381	0.1002	-1.2378*		Accepted
$NH_{3.1.14}$	0.1160	0.1034	0.0645	1.7974*	**0.233**	Accepted
$NH_{3.1.15}$	-0.0360	-0.0631	0.0487	-0.7386*		Accepted
$NH_{3.1.16}$	0.0370	0.0694	0.0519	0.7134*		Accepted
$NH_{3.1.17}$	0.0280	0.0753	0.0597	0.4689*		Accepted
$NH_{3.1.18}$	0.1310	0.1374	0.0849	1.5423*		Accepted

SOURCE: **Bennet and Selvam (2013[B6]),** Sentiments of Indian Equity Investors, Lambert Academic Publishing, Germany (Originally Collected from Primary Source and Computed fromE-Views (Version 7)).

* Insignificant; ** Significant at 5% level

Note:

$NH_{3.1.10}$: There is no relationship between Investors' Participation and PriceEarning RatioandFamiliarity with the Products and Services.

$NH_{3.1.11}$: There is no relationship between Investors' Participation and Financial Characteristics.

$NH_{3.1.12}$: There is no relationship between Investors' Participation and Psychological Factors.

$NH_{3.1.13}$: There is no relationship between Investors' Participation and Quality of Management.

$NH_{3.1.14}$: There is no relationship between Investors' Participation and Expected Events Surrounding the Stock and Book Value.

$NH_{3.1.15}$: Thereis no relationship between Investors' Participation andRecommendationof the Financial Community.

$NH_{3.1.16}$: There is no relationship between Investors' Participation and Price cut off Rules.

$NH_{3.1.17}$: There is no relationship between Investors' Participation and who else is Buying.

$NH_{3.1.18}$: There is no relationship between Investors' Participation and Past Price Performance andSector Attractiveness.

v) Expected Events Surrounding the Stock and the Book Value: The pathlinking EESS to the extent of usage of IP, was found not to be significant at 0.05 level (Beta= 0.1160 and t= 1.7974). In other words, Investor Participation was not influenced by EESS. Therefore, the null hypothesis ($NH_{3.1.14}$), namely, **there is no relationshipbetween Investors' Participation and Expected Events Surrounding the Stock and Book Value,** is accepted (**Table-3.4)**.

vi) Recommendation of the Financial Community: The study in the **Table-3.4** establishednegative relationship between RFC and IP. The study proved that it was not statistically significant at 0.05 level (Beta = -0.0360 and t= -0.7386). In other words,RFC did not influence IP. They were also negatively connected. Hence, null the hypothesis ($NH_{3.1.15}$), viz, **there is no relationship between Investors' Participation and Recommendation ofthe Financial Community,** is accepted.

vii) Price Cut off Rules: The path linking PCF to the extent of usage of IP, was notfound to be significant at 0.05 level (Beta = 0.0370, t= 0.7134). This implied that PCF did not influence the extent of usage of IP in ISs. Hence the null hypothesis ($NH_{3.1.16}$), namely, **there is no relationship between Investors' Participation and Price Cut offRules,** is accepted (**Table-3.4)**.

viii) '**Who Else is Buying?**': As revealed in **Table – 3.4,** the path linking WEB to the extent of usage of IP, was not found to be significant at 0.05 level (Beta = -0.0280 and t= 0.4689). This indicated that WEB did not influence the extent of usage of IP. Hence, the null hypothesis ($NH_{3.1.17}$), viz, **there is no relationship between Investors'Participation and Who else is Buying,** is accepted.

ix) Past Price Performance and Sector Attractiveness: In the **Table-3.4,** the study established thenegative relationship between PPPSA and IP. The study proved that it was not statistically significant at 0.05 level (Beta = 0.1310, t= 1.5423). In other words, that IP was not influenced by PPPSA. Therefore, the null hypothesis ($NH_{3.1.18}$), namely, **there isno relationship between Investors' Participation and Past Price Performance & Sector Attractiveness,** is accepted.

3.1.4. Bootstrap Summary for Stock Specific Factors & Investor Stock Market Outlook- Testing of Hypothesis

The null hypotheses, **3.1.19 to 3.1.27,** are related to the relationships between Investor Stock Market Outlook (ISMO) and various stock specific factors - PEFPS, FC, PF, QM, EESS, RCF, PCF, WEB, PPPSA. These hypotheses were tested by using PLS-PM procedure in Visual PLS Software. The results of hypotheses testing (bootstrap summary for stock specific factors and investor stock market outlook) are displayed in **Table – 3.5.**

i) Price Earnings Ratio and Familiarity with the Products and Services: Thepath linking a variable, namely, PEFPS to the extent of usage of ISMO, was found to be significant at 0.05 level (Beta = -0.3270 and t= -2.7536) and it was negatively related. This result revealed that ISMO was influenced by PEFPS and they were also negatively associated. Hence, the null hypothesis ($NH_{3.1.19}$), namely, **there is no relationship between Investors' StockMarket Outlook and Price Earnings Ratio and Familiarity with the Products and Services,** is rejected (**Table-3.5)**.

ii) Financial Characteristics: The study established positive relationship betweenFC and ISMO and proved that it was statistically significant at 0.05 level (Beta = - 0.2660, t= 2.3986). This implied that ISMO influenced the FC. Therefore, the null hypothesis ($NH_{3.1.20}$), viz, **there is no relationship between Investors' Stock MarketOutlook and Financial Characteristics,** is rejected (**Table-3.5)**.

iii) Psychological Factors: According to the results displayed in **Table – 3.5,** thepath linking PF to the extent of usage of ISMO, was not found to be significant at 0.05 level (Beta = 0.1540 and t= 1.8617). This indicated that PF is not influenced by ISMO. Hence, the null hypothesis ($NH_{3.1.21}$), namely, **there is no relationship betweenInvestors' Stock Market Outlook and Psychological Factors**, is accepted.

iv) Quality of Management: As revealed in **Table – 3.5**, the relationship betweenQM and ISMO was found to be positively significant at 0.05 level (Beta = 0.3630 and t=4.2051). This revealed that QM influenced the Investor Stock Market Outlook. Hence the null hypothesis ($NH_{3.1.22}$), viz, **there is no relationship between Investors'Stock Market Outlook and Quality of Management,** is rejected.

Table – 3.5

Boot Strap Summary for Stock Specific Factors and Investor Stock Market Outlook

Null Hypothesis	Entire Sample Estimate	Mean of Sub Samples	Standard Error	t - Statistic	R Square Value	Result
$NH_{3.1.19}$	-0.3270	-0.3171	0.1188	-2.7536*		Rejected
$NH_{3.1.20}$	**0.2660**	**0.2881**	**0.1109**	**2.3986****		**Rejected**
$NH_{3.1.21}$	0.1540	0.1556	0.0827	1.8617*		Accepted
$NH_{3.1.22}$	**0.3630**	**0.3627**	**0.0863**	**4.2051****		**Rejected**
$NH_{3.1.23}$	0.0350	0.0659	0.0517	0.6776*	**0.490**	Accepted
$NH_{3.1.24}$	-0.0230	-0.0489	0.0352	-0.6526*		Accepted
$NH_{3.1.25}$	-0.0070	-0.0590	0.0428	-0.1634*		Accepted
$NH_{3.1.26}$	**0.1710**	**0.1518**	**0.0792**	**2.1584****		**Accepted**
$NH_{3.1.27}$	0.1200	0.1223	0.0739	1.6230*		Accepted

SOURCE: **Bennet and Selvam (2013[B6]),** Sentiments of Indian Equity Investors, Lambert Academic Publishing, Germany (Originally Collected from Primary Source and Computed from E Views (Version 7)).

* Insignificant; ** Significant at 5% level

Note:

NH3.1.19: There is no relationship between Investors' Stock Market Outlook and Price Earning Ratio and Familiarity with the Products and Services.

NH3.1.20: There is no relationship between Investors' Stock Market Outlook and FinancialCharacteristics.

NH3.1.21: There is no relationship between Investors' Stock Market Outlook and PsychologicalFactors.

NH3.1.22: There is no relationship between Investors' Stock Market Outlook and Quality of Management.

NH3.1.23: There is no relationship between Investors' Stock Market Outlook and Expected Events surrounding the Stock and Book Value.

NH3.1.24: There is no relationship between Investors' Stock Market Outlook and Recommendation of the Financial Community.

NH3.1.25: There is no relationship between Investors' Stock Market Outlook and Price cut off Rules.

NH3.1.26: There is no relationship between Investors' Stock Market Outlook and who else isBuying.

NH3.1.27: There is no relationship between Investors' Stock Market Outlook and Past PricePerformance and Sector Attractiveness.

v) Expected Events Surrounding the Stock and the Book Value: The pathlinking a variable, namely, EESS to the extent of usage of ISMO, was not significant at 0.05 level (Beta = 0.0350, t= 0.6776). This implied that EESS did not influence the Investor Stock Market Outlook. Therefore, the null hypothesis ($NH_{3.1.23}$), namely, **there is no relationshipbetween Investor's Stock Market Outlook and Expected Events Surrounding the Stock and Book Value,** is accepted (**Table-3.5)**.

vi) Recommendation of the Financial Community: The study in the **Table-3.5** establishednegative relationship between RFC and ISMO. The result of path linking RFC to the extent of usage of ISMO, was not found to be significant at 0.05 level (Beta = -0.0230 and t= -0.6526). This indicated that RFC did not influence the ISMO and they were negatively connected. Hence, the null hypothesis ($NH_{3.1.24}$), viz, **there is no relationshipbetween Investors' Stock Market Outlook and Recommendation of the Financial Community,** is accepted.

vii) Price Cut off Rules: The path linking PCF to the extent of usage of ISMO, wasnot found to be significant and it was also negatively related at 0.05 level (Beta = - 0.0070, t= -0.1634). This revealed that PCF did not influence the extent of usage of ISMO. Hence, the null hypothesis ($NH_{3.1.25}$), namely, **there is no relationshipbetween Investors' Stock Market Outlook and Price cut off Rules,** is accepted (**Table-3.5)**.

viii) '**Who Else is Buying?**': As revealed in **Table – 3.5,** the result of path linking WEB tothe extent of usage of ISMO, was not found to be significant and it was also negatively related at 0.05 level (Beta = - 0.1710 and t= 2.1584). This indicated that WEB did not influence the extent of usage of ISMO in ISs and it was also negatively related. Hence, the hypothesis ($NH_{3.1.26}$), namely, **there is no relationship between Investors'Stock Market Outlook and Who Else is Buying,** is accepted.

ix) Past Price Performance and Sector Attractiveness: The study establishednegative relationship between PPPSA and ISMO. The study proved that it was not statistically significant at 0.05 level (Beta = 0.1200 and t= 1.6230). In other words, PPPSA did not influence the Investor Stock Market Outlook. Hence, the null hypothesis ($NH_{3.1.27}$), viz, **there is no relationship between Stock Market Outlook and Past PricePerformance & Sector Attractiveness,** is accepted (**Table-3.5)**.

The overall results, relating to investors' sentiments, revealed that the stock specific factors exercised greater influence on investors' optimism and investors' stock market outlook and recorded lesser influence on investor participation. Thus it can be concluded that investor sentiment is one of the determinants of firm performance, by stock specific factors.

3.2. SECTION-B: CUSTOMER SERVICE LOYALTY

In the present day world of fierce competition, rendering quality service is a key for subsistence and success in any organization (**Sudhahar and Selvam, 2008).** In the service industry, the quality of customer services holds primary significance in the context of sustained business growth **(Selvam, 2005[A3]).** Top managers of firms persist with an idea that every functional activity should have as its ultimate goal the creation of shareholders value **(Day and Fahey, 1988; Hunt and Morgan, 1995).** The financial performance has also been a prominent area of interest for corporate officials, including CEOs because their evaluations can be significantly influenced by customer satisfaction, and they are directly linked to their compensation **(Ittner, et al., 1997).** In thiscontext, it is important to know how customer satisfaction influences a firm's value and profitability. Most companies are trying to attract the customers and to make them satisfied with the companies' products or services in order to increase customer service loyalty. Among various methods to measure a firm's competitiveness and marketing performance, customer satisfaction is the most universally accepted measurement **(Morgan, et al., 2006),** as well as an influential performance metric **(Kaplan and Norton, 1996).**

According to **Sudhahar and Selvam (2006[A4]),**service quality strategy is a set of guidelines that provides orientations for everyone in the organization.In today's highly competitive environment, organizations should protect the long term interests

of the customers. Hence, firm should seek ways through which the customer loyalty towards firms, will be forged **(Sudhahar et al., 2006$_a$ [A5]; Sudhahar et al., 2006$_b$ [A6]).** Many firms attempt to measure customer satisfaction in order to evaluate whether they meet their customers' needs better than their competitors **(Fornell, et al., 2006).** In addition, a recent study found that customer satisfaction improves the ability of firm to predict future cash flows, stock performance, long-term financial measure, and shareholders' value **(Aksoy, et al., 2008).** On a related issue, a study by **Anderson et al., (2004)** found a positive association between a firm's current level of customer satisfaction and simultaneous financial market indexes, such as Tobin's q, stock, and market-to-book ratio. The other researchers have examined the relationship between satisfaction and raw market value and concluded that when it comes to influencing shareholder value, customer satisfaction is a key component that matters to financial markets **(Ittner and Larker, 1998; Rust, et al., 2004).**

The firm performance was analysed,by measuring the customer loyalty and confirmed that customers are the fortitude of firms **(Gupta and Zeithaml, 2006)**. Hence the main agenda of firm is to create customers **(Ang and Buttle, 2006).** Firms would not be able to uphold and increase their performance, without customers **(Buttle, 2004; Gupta and Zeithaml, 2006)** as firms without revenues and without profits,have no market value **(Ang and Buttle, 2006).** Several past studies claimed that the existence of a firm is mainly to create and sustain an advantageous relationship with its preferred customers **(Ryals and Knox, 2005; Ang and Buttle, 2006).** Service quality is the function of perceptions, expectations and performance **(Sudhahar and Selvam, 2007[A9]; Sudhahar et al., 2008[A10]).** Therefore, it is assumed that customer loyalty affects corporate performance since it is evident that customers will continuously buy a product from companies only if they are loyal. These customers will not only buy the product again later but will also recommend other (prospective) customers to buy it. The aforesaid assumption clearly indicates that customer loyalty can be observed from various perspectives and during various time intervals.

The service quality primarily determines the customer value which, in turn, contributes to the customer retention and loyalty **(Sudhahar et al., 2006c[A7]).** Hence, customer service loyalty and quality is one of the most frequently addressed subjects. The subject has gained the attention of service companies because of its importance to the successful running of any business. Realizing the prime importance of customer loyalty to service organisations, a major concern is to determine how it is affected. Issues involving customer loyalty in service organisations have drawn the attention of various researchers, who are concerned with finding the determinants of customer loyalty and their implications in service industries. It is to be noted that higher customers' loyalty is the outcome of best performance of service firms.

3.2.1. Analysis of Customer Service Loyalty and Testing of Hypotheses

The objective of developing and empirically testing the service loyalty model, for retail banking services in India, was carried out by testing the null hypothesis, **NH-3.2.1**.

Figure-3.1 hypothesizes that 30 items fall into a ten separate measurement model. The data were subjected to CFA, using the AMOS 5.0 structure equation modeling software. For the purpose of establishing the unidimensionality, it was required that the measurement model needs to be specified for each construct, to assess how closely they repeat the same construct. For this purpose, as used by **Sudhahar and Selvam (2008[B1]),** Comparative Fit Indices (CFI) was required to establish the unidimensionlity. Accordingly, the CFI index, for all the SL dimensions were found out and the same are presented in **Figure-3.1**. As indicated, all the individual measurements had passed the unidimensionality test.

Figure-3.1: Service Loyalty Measurement Model

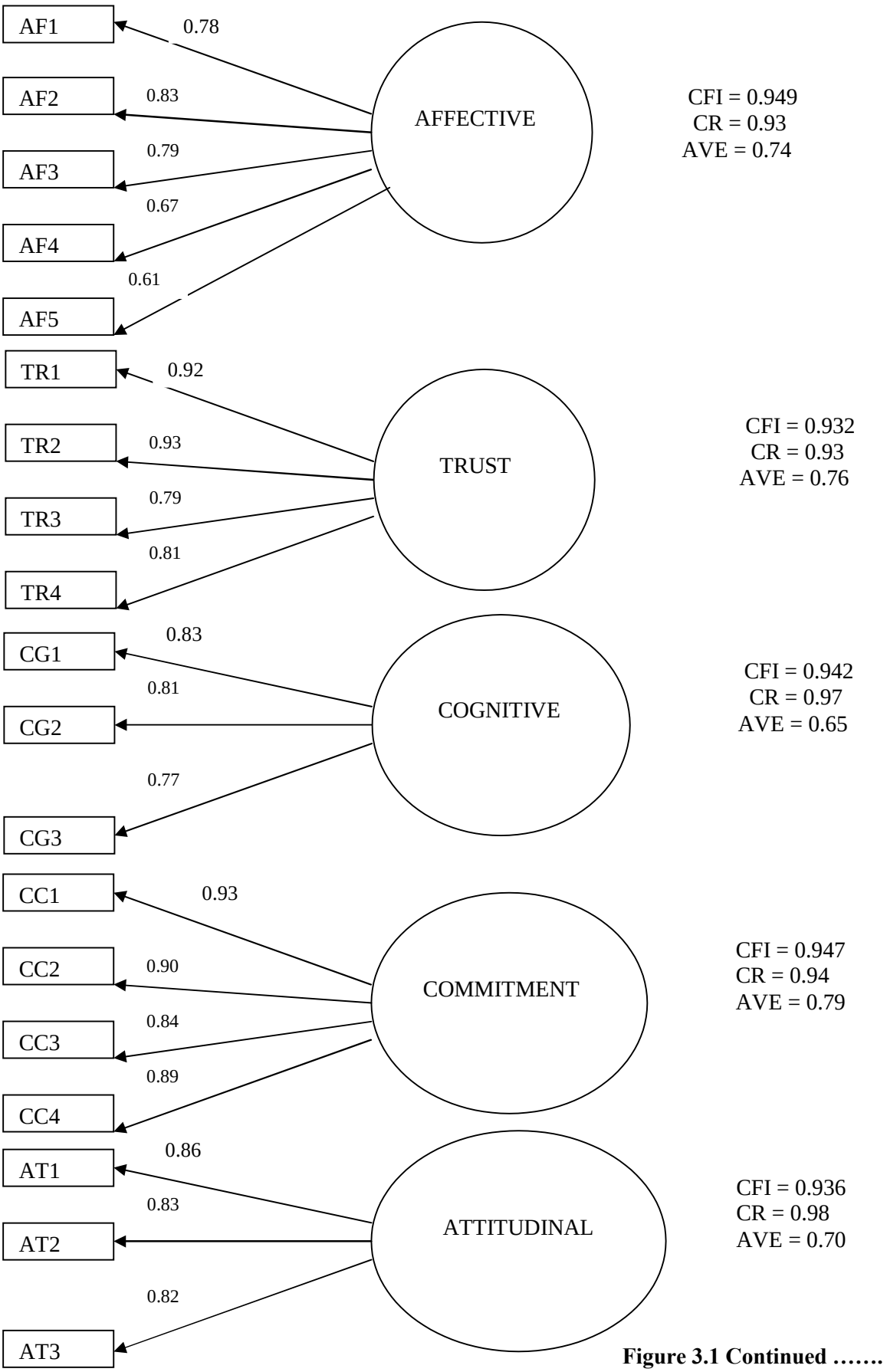
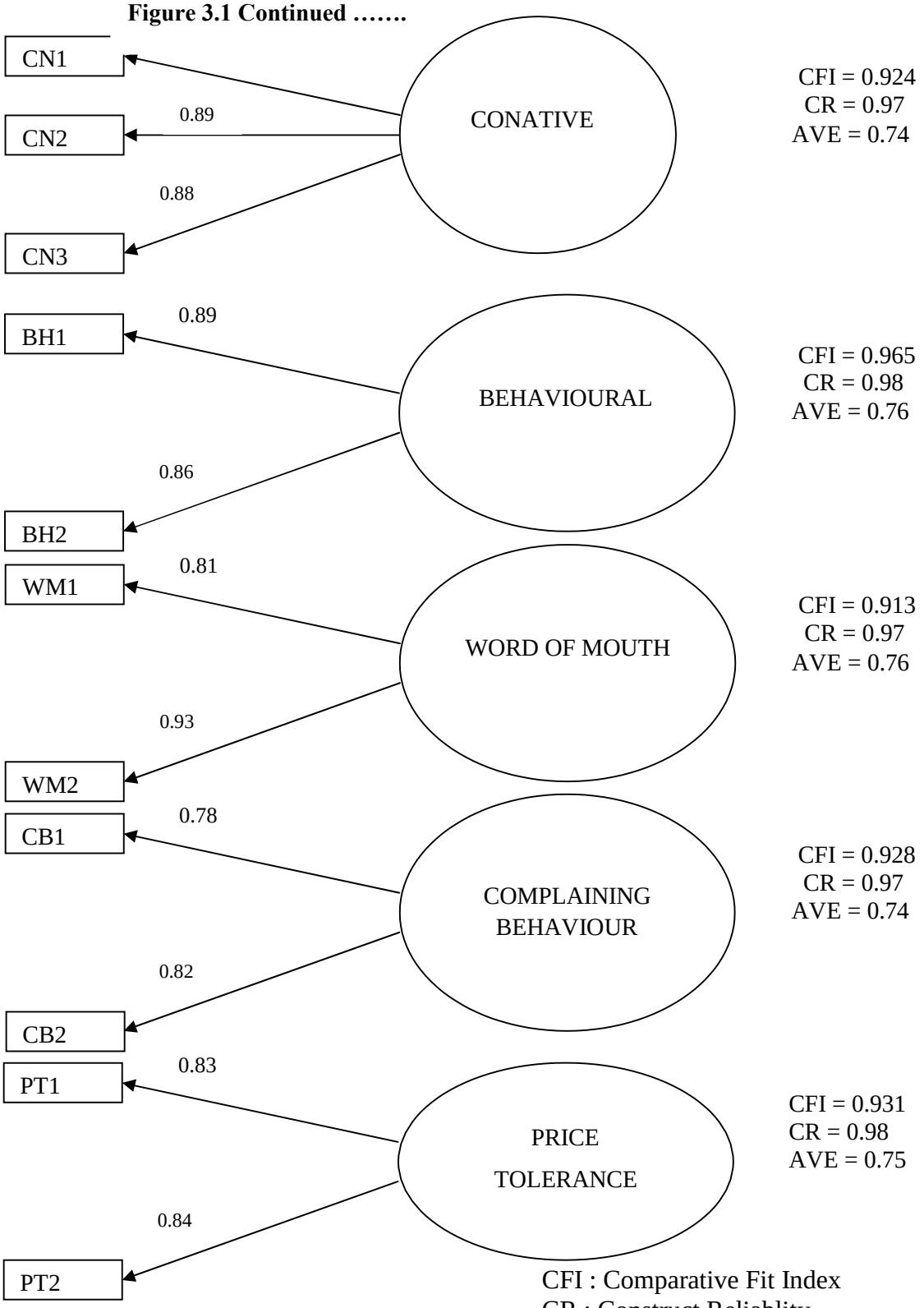


Figure 3.1 Continued …….

Figure 3.1 Continued …….



Source: Sudhahar and Selvam (2008[B1]), Customer Loyalty Management in Banking, Pallavi Publications S. India Pvt. Ltd (Originally Collected from Primary Source and computed using AMOS).

Sudhahar et al., 2006$_a$[A5] identified seven sub dimensions, in the measurement of customer service loyalty and those sub dimensions included the dimensions of Behavioral, Attitudinal, Cognative, Conative, Affective, Trust and Commitment. But this study used 10 dimensions, by adding three more sub dimensions, namely, Word of mouth, Complaining behavior and Price tolerance. As seen in **Table-3.6,** the reliability obtained, for each sub dimension, in the measurement of SL construct, was above 0.80 and it implied that more than half of the variance were accounted for by the items in each sub dimension **(Sudhahar and Selvam, 2008[B1]).**

As used by **Sudhahar and Selvam (2008[B1]),** the factor loadings, greater than 0.50, are considered to be very significant. All the items in the present measurement model, recorded factor loadings greater than 0.80 and squared multiple correlation between the individual item and their respective sub dimension were high, above 0.50 in all the cases. Thus, it is evident that the entire sub dimension in the measurement model, for the SL construct, recorded adequate reliability and convergent validity **(Sudhahar and Selvam, 2008[B1]).**

The null hypothesis (**NH-3.2.1),**namely, **Customer service loyalty is not better indicated by dimensions, (such as behavioral, attitudinal, cognitive, affective, conative, trust, commitment, word-of-mouth, complaining behavior and price tolerance),**is rejected.The t-statistics was found to be significant at significant level 0.05, suggesting that all the ten dimensions, undertaken for the CFA test,were true indicators of customer service loyalty (more detail in **Table-3.6**).

The results confirmed that customer service loyalty is a determinant of firm's performance as it is influenced by ten pertinent factors, driving towards repeated purchase by customer. This shows that customer value has been received as one of the principal drivers of customer satisfaction, which acts as a key determinant of repurchase and ultimately of customer retention and loyalty **(Sudhahar et al., 2004[A1]).**

Table-3.6
Service Loyalty Scale's Reliability and Validity Results

Items	Mean (SD)	EFA Loadings	CFA Loadings	Construct Reliability
Behavioural				
1. I will transact with this bank again for future needs.	**(0.6)**	**0.56**	0.89	0.98
2. I will try new services that are provided by this bank.	**(0.7)**	**0.49**	0.86	
Attitudinal				
1. I have a strong preference to this bank	**(0.5)**	**0.65**	0.86	
2. I will keep patronizing this bank regardless of everything being changed	**(0.7)**	**0.54**	0.83	0.98
3. I find this bank better than the others	**(0.6)**	**0.49**	0.82	
Cognitive				
1. To me this bank would rank first among the other banks	**(0.8)**	**0.62**	0.83	
2.I will deal exclusively with this bank	**(0.6)**	**0.53**	0.81	0.97
3. The bank I patronize reflects a lot about who I am	**(0.9)**	**0.62**	0.77	
Affective:				
1. I will persuade other people to do business with this bank	**4.0 (0.7)**	**0.83**	0.78	
2. I have a positive emotional attachment to this bank	**(0.5)**	**0.89**	0.83	
3. I am satisfied with my decision to stay with this bank	**3.9 (0.6)**	**0.71**	0.79	0.93
4. I think of this bank as my bank	**4.1 (0.5)**	**0.84**	0.67	
5. I like the performance and services of this bank	**4.0 (0.5)**	**0.87**	0.61	
Conative :				
1. I intend to choose this bank when I have a financial need next time	**4.2 (0.4)**	**0.58**	0.81	
2. I would patronize this bank for along time	**4.1 (0.5)**	**0.49**	0.89	
3. Even when I hear negative information about this bank, I will stick with this bank.	**4.0 (0.6)**	**0.51**	0.88	0.97
4. I intend to stick with this bank even if competitors give a slightly better deal.	**4.1 (0.6)**	**0.77**	0.86	
Trust:				
1. I have complete trust in my bank	**4.1 (0.7)**	**0.78**	0.92	
2. The employees of the bank have high integrity	**4.3 (0.6)**	**0.80**	0.93	0.93
3. The bank personnel are filled with professionalism and dedication.	**4.0 (0.8)**	**68.00**	0.79	

4. When my bank suggests a new product to me, I believe it is best for me in that bank.	**4.2 (0.7)**	**0.64**	0.81	
Commitment:				
1. I am personally attached to this bank	**4.1 (0.7)**	**0.97**	0.93	
2. I am committed to continue my relationship with this bank	**3.9 (0.6)**	**0.77**	0.93	
3. I do not see any other bank fulfilling my needs as this bank does	**4.0 (0.5)**	**0.69**	0.84	0.94
4. Even when I hear negative information about this, I will stick with this bank	**4.0 (0.5)**	**0.58**	0.89	
Word-of-Mouth:				
1. I will recommend other people to patronize this bank	**4.2 (0.7)**	**0.64**	0.81	
2. I will say positive things to other people about the services provided at this bank	**4.1 (0.6)**	**0.59**	0.93	0.97
Complaining Behaviour:				
1. When a problem arises I will complain to bank employees first	**4.0 (0.5)**	**0.59**	0.78	
2. I will not hesitate to give suggestions to improve quality of services	**3.9 (0.7)**	**0.55**	0.82	0.97
Price Tolerance:				
1. I am likely to pay a little bit more for using the services of this bank	**4.2 (0.6)**	**0.50**	0.83	0.93
2. I will continue to patronize this bank even if the service charges are increased moderately	**4.1 (0.5)**	**0.48**	0.84	

Source: Sudhahar and Selvam (2008[B1]),Customer Loyalty Management in Banking, Pallavi Publications S. India Pvt. Ltd (Originally Collected from Primary Source).

3.3. SECTION-C: SERVICE EFFICIENCY

Service Organizations (like public transport corporation), in the move toward new quality concept and customer satisfaction, need to assess their service efficiency. Due to the highly diverse and dynamic nature of service environment, characterized by a wide range of services, offered by a variety of service providers to divergent groups of customers, a fixed set of qualitative standards, like what has been established for manufactured products, could not be set for services (**Selvam, 2016$_a$[B12])**.

Bakti and Sumaedi (2013) found that service quality directly influenced customer loyalty and indirectly, through satisfaction. Service quality had a direct effect on satisfaction, and indirectly influenced the customer loyalty. This shows that there was relationshipbetween service quality and service loyalty.

Does service efficiency affect firm's performance is one of the key contemporary issues, which has attracted attention from practitioners, policy makers and researchers, working in multidisciplinary areas in management. Most of the authors analysed the role of quality in the overall performance of a service business, right from strategic level down to the implementation details. Although the relationship between service quality and profit, has been considered to be neither simple nor straight forward, a significant body of services literature has tried to establish the linkage between quality and different firm performance parameters. For example, improved service quality and customer satisfaction have been shown to lead to higher productivity, increased loyalty, lower transaction cost, price-premium, favorable word-of-mouth, market share, repurchase intention, customer retention and improved firm reputation. It is popularly believed that better service leads to improved performance, for service firms, including Public Transport Undertakings (**Selvam, 2016$_c^{B14}$)**.

3.3.1. Analysis of Service Efficiency and Testing of Hypotheses

The service efficiency of Pallavan Transport Corporation (PTC) could be evaluated from the view of operators, passengers and bus crew. The results of service efficiency, from the view of passengers (primary stakeholders), as found by **Selvam (2016$_a^{B12}$),**were discussed under the following heads, to mainly test the null hypotheses - **NH 3.3.1 to NH 3.3.2.**

i. Observed Opinion of Passengers on Service Efficiency
ii. Weightages of Factors in Evaluating Service Efficiency
iii. Weightage of Factors – ANOVA, Principal of Component and Correlation Method (**Selvam, 2016$_c^{B14}$)**.

i. Observed Opinion of Passengers on Service Efficiency

Table-3.7 shows the observed opinion of passengers, about the service efficiency of the PTC. As shown in the aboveTable, the x^2 test indicated that the null hypothesis (**NH-3.3.1),** **namely,"the proportion of people expressing their opinion on various factors as crucial with regard to service efficiency of PTC is uniform of passengers (sex and occupations)",** cannot be rejected. It is concluded so because the x^2 value of 31.02 was less than the table value of 56.10, at 42 degrees of freedom.

The results further revealed that the proportion of groups of passengers, classified on the basis of their occupation-cum-sex such as male and female business people, male and female office goers, male and female students and male and female of other sections, was 125 each. The safe travel was reported as an important factor by 27 males in business group and in other sections, fare was reported as a vital one, by 20 females in business group, 19 females in office goers group and 18 males and females in other sections. As far as the behaviour of bus crew was concerned, 23 females in students group, 22 males in office goers group and 20 males in other sections were of the opinion that good behaviour of bus crew was important. On the other hand, 22 males from business group, 20 males in students group and in other sections considered the comfort and convenience as a significant factor while punctuality was supported as a vital factor by 21 females in business group, 20 females in office-goers group and 19 female students.

With regard to frequency and speed, 19 females in business group and in student group, 19 males in office goers group and 22 males in student group reported that frequency was a vital factor while 21 female in student group, 20 males in office goers group and 19 females in office goer group opined that speed was a significant factor in a transport system (**Selvam, 2016$_a^{B12}$;Selvam, 2016$_c^{B14}$)**.

Table – 3.7

Observed Opinion of Passengers about Service Efficiency of PTC

Factors (for Service Efficiency)	Business People		Office goers		Students		Other sections		Total
	Male	Female	Male	Female	Male	Female	Male	Female	
Speed of Buses	16	18	20	19	17	21	12	17	140
Frequency of Buses	15	19	19	18	22	19	12	14	138
Punctuality of Bus Timings	19	21	16	20	15	19	16	17	143
Comfort and Convenience	22	16	18	17	20	16	20	18	147
Behaviour of Bus Crew	14	16	22	18	18	23	20	19	150
Fare of Buses	12	20	14	19	14	16	18	18	131
Safe Travel	27	15	16	14	19	11	27	22	151
Total	125	125	125	125	125	125	125	125	1000

SOURCE:Selvam (2016$_a^{B12}$), Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source). $X^2 = 31.02$ df : 42 Table Value = 56.10 NS

ii. Weightages of Factors in Evaluating Service Efficiency

The result of x^2 test revealed that there was no significant difference in the opinion of different groups of passengers, with regard to different factors such as speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, bus fare and safe travel, which reflected the service efficiency of the bus operation by PTC. In other words, the proportion of people, specifying a particular factor as very important, was statistically the same for all factors. About one seventh (1/7) of total respondents preferred each factor as vital, with regard to service efficiency of PTC. This was corroborated by the results, which are given in **Table-3.8** and they were obtained while evaluating the service efficiency of bus operation, using Thurston Comparative Judgment Method, suggested by **Guilford (1954).**

As pointed out earlier, the service efficiency of PTC was tested, in respect of seven variables, namely, speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, bus fare and safe travel. The result also revealed that with regard to speed, higher weightage was given by the people in the other section (3.507), of which the weightage assigned by female (1.953) was greater than that of male (1.554). It was followed by the weightages of business people (2.725), students (2.724) and office goers (2.420). Similarly, frequency also claimed higher weightage of 3.782 from other sections of which males' share was 1.890 and female was 1.892. This was followed by the weightages of business people (3.024), office goers (2.694) and students (2.687).

As far as punctuality was concerned, other sections assigned higher weightage (3.162) of which 1.608 was given by males and 1.554 was given by females and this was followed by students, office goers and business people whose weightages were 3.082, 2.850 and 2.377 respectively. In the case of comfort and convenience for the passengers, business people gave higher weightage (2.965), of which the weightage of male was 1.470 and that of female was 1.495. This was followed by the weightages of other sections (2.881), students (2.682) and office goers (2.633).

With regard to behaviour of bus crew, the weightage of office goers was 2.863 and that of business people was 2.575. This was followed by other sections and students whose weightages were 2.302 and 2.564 respectively. Regarding bus fare, higher weightage was from office goers (3.310), which was followed by the weightages of students (3.110), business people (2.899) and other sections (2.322).

Table-3.8

Weightages of Various Factors in Evaluating Service Efficiency of PTC (Thurston &Comparative Judgment Method)

Factors (Service Efficiency)	Business People			Office goers			Students			Other sections			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Speed of Buses	1.168	1.557	2.725	1.262	1.158	2.420	1.462	1.262	2.724	1.554	1.953	3.507	1.362	1.483	2.845
Frequency of Buses	1.271	1.753	3.024	1.262	1.432	2.694	1.425	1.262	2.687	1.890	1.892	3.782	1.462	1.585	3.047
Punctuality of Bus Timings	1.092	1.285	2.377	1.452	1.398	2.850	1.630	1.452	3.082	1.608	1.554	3.162	1.446	1.422	2.868
Comfort and Convenience	1.470	1.495	2.965	1.282	1.351	2.633	1.400	1.282	2.682	1.346	1.535	2.881	1.375	1.412	2.787
Behaviour of Bus Crew	1.290	1.285	2.575	1.496	1.367	2.863	1.068	1.496	2.564	1.163	1.139	2.302	1.254	1.322	2.576
Fare of Buses	1.579	1.320	2.899	1.666	1.644	3.310	1.444	1.666	3.110	1.176	1.146	2.322	1.466	1.445	2.911
Safe Travel	2.130	1.305	3.435	1.580	1.650	3.230	1.571	1.580	3.151	1.263	0.802	2.065	1.635	1.334	2.969
Total	10.000	10.000	20.000	10.000	10.000	20.000	10.000	10.000	20.000	10.000	10.000	20.000	10.000	10.000	20.000

SOURCE: **Selvam (2016$_a^{B12}$),** Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source).

As far as safe travel was concerned, higher weightage was given by business people (3.435), in which the weightage of businessmen was 2.130 and that of business women was 1.305. This was followed by office goers, students, and other sections, whose weightages were 3.230, 3.151 and 2.065 respectively.

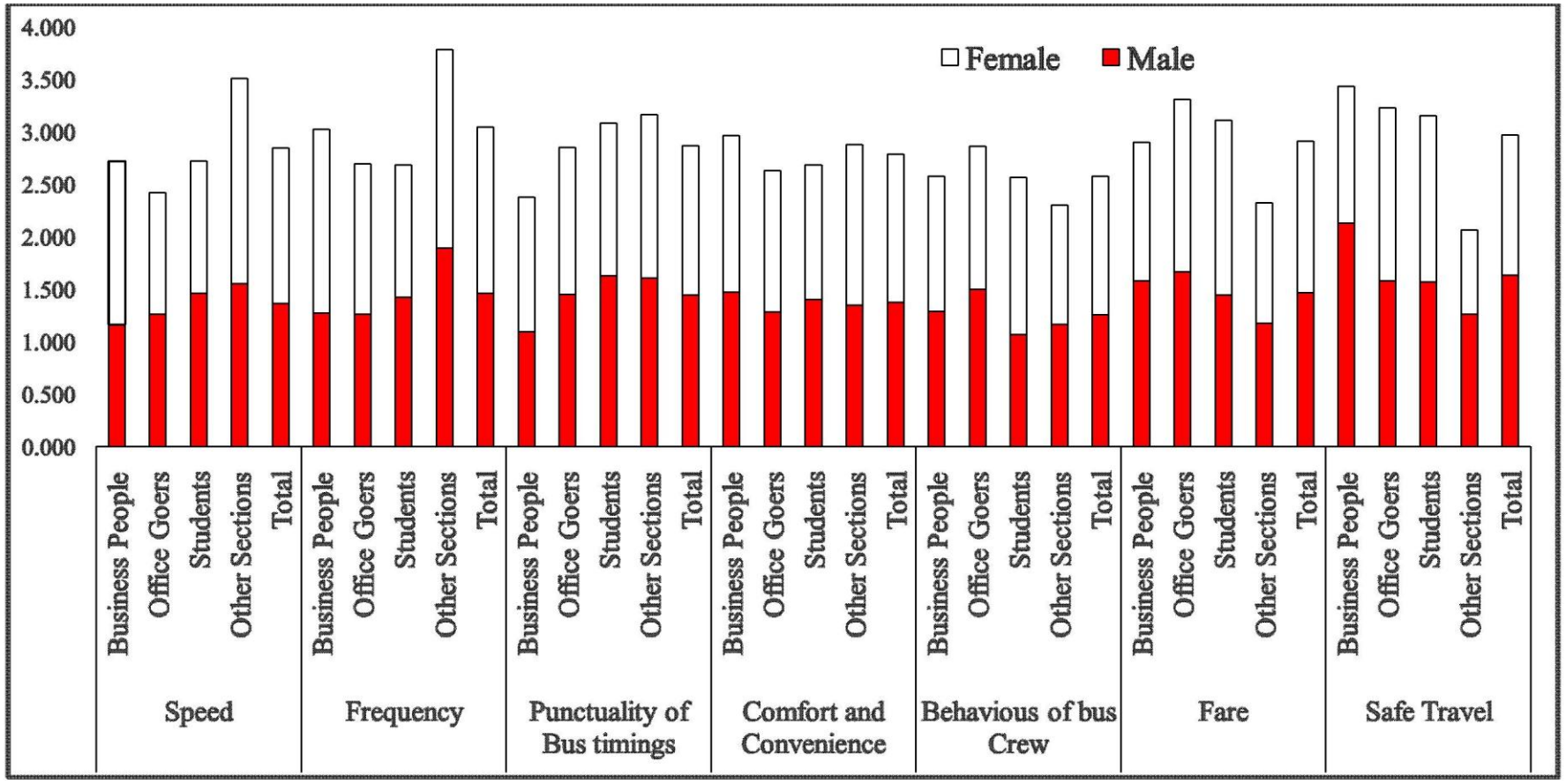
It is also understood from the present study that in the present system of bus operation, frequency received higher weightage (3.047), of which males' share was 1.462 and females' share was 1.585. The next weightage went to safe travel (2.969) of which males' contribution was 1.635 and females' contribution was 1.334. This was followed by fare (2.911), punctuality (2.868), speed (2.845), comfort and convenience (2.787) and behaviour of bus crew (2.576) (**Selvam, 2016$_a$[B12]**; **Selvam, 2016$_c$[B14])**. The weightages, obtained from Thurstone Comparative Judgement. Method, are also shown in **Figure-3.2,** which is self-explanatory.

iii. Weightages of Factors – ANOVA, Principal of Component and Correlation Method The weightages, obtained from Thurstone Comparative Judgement Method, were further analysed by using Analysis of Variance Technique. It is observed that average results, which were given to seven factors, were uniform for all categories **(**Refer **Table-3.9).**

Another method of construction of index, using various factors is the First Principal Component Method. The weightages, for the standardised scores of various factors by the principal component method, are given in **Table-3.10.** From the Table, it is seen that negative weights were attached to all factors, except safe travel. This implied that when anyone factor such as speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, and fare of buses, was below its average value, the efficiency index, using Principal of Component Method, increased. The same will be the result for other factors also, which behaved in the above manner. But as far as safe travel was concerned, when the score was more than the average, the efficiency score increased. Numerical values of weightages were more or less equal (**Selvam, 2016$_c$[B14])**.

Under the Principal of Component Method, the speed accounted for 25% of variation in the efficiency index while frequency and punctuality accounted for 15% and 13% of variation respectively, in the efficiency index. As far as comfort and convenience were concerned, they represented about 13% of variation. But behaviour of bus crew accounted for only 12% of variation. 22 % of variation in the efficiency index was accounted by both fare and safe travel, each having an equal share **(**Refer **Table-3.11; Selvam 2009$_a$[A12]; Selvam, 2016$_c$[B14])**.

Figure – 3.2
Weightage of Various Factors in Evaluatioing Service Efficiency of PTC



SOURCE: **Selvam (2016$_a^{B12}$),**Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source).

Table – 3.9

The Results of Analysis of Variance (ANOVA) on the Satisfaction of Passengers

Source		Degree of freedom	Sum of square	Mean Square	Ratio
Between		6	2.686 E-01	4.477 E-02	0.78
Within		49	2.820	5.754 E-02	--
Total		55	3.088	--	--
Mean Values					
a) Speed of Buses	1.422				
b) Frequency of Buses	1.520				
c) Punctuality of Bus Timings	1.434				
d) Comfort and Convenience	1.395				
e) Behaviour of Bus Crew	1.287				
f) Fare of Buses	1.460				
g) Safe Travel	1.485				
Barlett's test of equal variance		Chi-Square 10.81	Degree of freedom 6	Table value 12.59	

SOURCE: Selvam (2016$_a$[B12]), Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source).

Table – 3.10

Weightages of Various Factors Influencing in Evaluating Service Efficiency of PTC (Principal of Component)

Factors	Mean values
a) Speed of Buses	- 0.3311
b) Frequency of Buses	- 0.4327
c) Punctuality of Bus Timings	- 0.4113
d) Comfort and Convenience	- 0.4316
e) Behaviour of Bus Crew	- 0.3796
f) Fare of Buses	- 0.3662
g) Safe Travel	+ 0.2635

SOURCE:Selvam (2016$_a$[B12]), Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source).

Table-3.11

Eigen Values/Eigen Vectors Based on Correlation Matric of Various Factors in Evaluating Service Efficiency of PTC

Factors	Eigen values	Percentage of variance	Cumulative percentage of variance
a) Speed of Buses	1.737	24.8	24.8
b) Frequency of Buses	1.028	14.7	39.5
c) Punctuality of Bus Timings	9.160 E-01	13.1	52.6
d) Comfort and Convenience	8.818 E-01	12.6	65.2
e) Behaviour of Bus Crew	8.630 E-01	12.3	77.5
f) Fare of Buses	8.004 E-01	11.4	89.0
g) Safe Travel	7.731 E-01	11.0	100.0

SOURCE:Selvam (2016$_a$[B12]), Service Efficiency of Pallavan Transport Corporation, Lambert Academic Publishing, Germany (Originally Collected from Primary Source).

Negative weightages were given to factors, other than safe travel. This revealed that Madras (Now, Chennai) commuters viewed safe travel as the deciding factor, for service efficiency, in the bus operation of PTC. Thus the service efficiency of PTC, from the point of view of passengers, was determined by various factors such as speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, bus fare and safe travel. But the analysis revealed that safe travel was the deciding factor for assessing the service efficiency. Hence the hypothesis, **$NH_{3.3.2}$ namely, "safe travel is not a deciding factor for measuring service efficiency of PTC",** is rejected. The corporate firm should immediately attend to the factor, namely, safe travel, which would promote satisfaction to the passengers. But it did not mean that other factors like speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, and bus fare, were not important. These factors should also be given due weightage by firms when they evaluate their overall performance (**Selvam, 2016_a^{B12}**). It can be concluded that service efficiency is the important determinant of firm performance as the firm cannot survive without customers. Customers' continued usage of service depends upon service efficiency **(Selvam, 2016_a^{B12})**.**Table-3.12** shows details about the testing of hypotheses relating to stack holders' satisfaction on the performance of the firms.

3.4. Sum-up of the Stakeholders' perspective on the Performance of Firms

As pointed out earlier, the present Chapter analysed the firm performance, in terms of satisfaction of shareholders (investor sentiment, customer service loyalty and service efficiency). The analysis of investor sentiments, on the dimensions of investors' optimism, investors' stock market outlook and investor participation, clearly indicated that investor sentiment was one of the determinants of firm performance. Similarly, the analysis of customer service loyalty found that ten pertinent factors of customer loyalty service (such as Behavioral, Attitudinal, Cognative, Conative, Affective, Trust, Commitment, Word of Mouth, Complaining Behavior and Price Tolerance) caused repeated purchase or use of services by customers. In short, customer service loyalty influences the firm performance. The analysis of service efficiency clearly shows that the service efficiency is the important determinant of firm performance (**Selvam, 2016_c^{B14})**.

Table-3.12

Testing of Hypotheses relating to Stakeholders' Satisfaction on the Performance of the Firm

NH No.	Hypothesis	Remarks
	Satisfaction of Investors (Investors Sentiments)	
	Stock Specific Factors and Investors Optimism	
NH-3.1.1	There is no relationship between Investors' Optimism and Price Earning Ratio and Familiarity with the Products and Services	Accepted
NH-3.1.2	There is no relationship between Investors' Optimism and Financial Characteristics	Rejected
NH-3.1.3	There is no relationship between Investors' Optimism and Psychological Factors	Rejected
NH-3.1.4	There is no relationship between Investors' Optimism and Quality of Management	Rejected
NH-3.1.5	There is no relationship between Investors' Optimism and Expected Events surroundingthe Stock and Book Value	Rejected
NH-3.1.6	There is no relationship between Investors' Optimism and Recommendation of the Financial Community	Rejected
NH-3.1.7	There is no relationship between Investors' Optimism and Price cut off Rules	Accepted
NH-3.1.8	There is no relationship between Investors' Optimism and who else is Buying	Accepted
NH-3.1.9	There is no relationship between Investors' Optimism and Past Price Performance & Sector Attractiveness	Accepted
Stock Specific Factors and Investors Participation		
NH-3.1.10	There is no relationship between Investors' Participation and Price Earning Ratio and Familiarity with the Products and Services	Accepted
NH-3.1.11	There is no relationship between Investors' Participation and Financial Characteristics	Rejected
NH-3.1.12	There is no relationship between Investors' Participation and Psychological Factors	Accepted
NH-3.1.13	There is no relationship between Investors' Participation and Quality of Management	Accepted
NH-3.1.14	There is no relationship between Investors' Participation and Expected Events Surrounding the Stock and Book Value	Accepted

Table-3.12 ((Continued) Testing of Hypotheses relating to Stakeholders' Satisfaction on the Performance of the Firm		
NH-3.1.15	There is no relationship between Investors' Participation and Recommendation of the Financial Community	Accepted
NH-3.1.16	There is no relationship between Investors' Participation and Price cut off Rules	Accepted
NH-3.1.17	There is no relationship between Investors' Participation and who else is Buying	Accepted
NH-3.1.18	There is no relationship between Investors' Participation and Past Price Performance & Sector Attractiveness	Accepted
Stock Specific Factors and Investors Stock Market Outlook		
NH-3.1.19	There is no relationship between Investors' Stock Market Outlook and Price Earnings Ratio and Familiarity with the Products and Services	Rejected
NH-3.1.20	There is no relationship between Investors' Stock Market Outlook and Financial Characteristics	Rejected
NH-3.1.21	There is no relationship between Investors' Stock Market Outlook and Psychological Factors	Accepted
NH-3.1.22	There is no relationship between Investors' Stock Market Outlook and Quality of Management	Rejected
NH-3.1.23	There is no relationship between Investors' Stock Market Outlook and Expected Events surroundingthe Stock and Book Value	Accepted
NH-3.1.24	There is no relationship between Investors' Stock Market Outlook and Recommendation of the Financial Community	Accepted
NH-3.1.25	There is no relationship between Investors' Stock Market Outlook and Price cut off Rules	Accepted
NH-3.1.26	There is no relationship between Investors' Stock Market Outlook and who else is Buying	Accepted
NH-3.1.27	There is no relationship between Investors' Stock Market Outlook and Past Price Performance & Sector Attractiveness	Accepted
Customer Service Loyalty		
NH-3.2.1	Customer Service Loyalty is better indicated by dimensions, namely, behavioral, attitudinal, cognitive, affective, conative, trust, commitment, word of mouth, complaining behavior and price tolerance	Rejected
Service Efficiency		
NH-3.3.1	The proportion of people expressing their opinion on various factors as crucial with regard to service efficiency of PTC is uniform of passengers (sex and occupations)	Accepted
NH-3.3.2	Safe travel is not deciding a factor for measuring service efficiency of PTC	Rejected

Source: Table -3.1 to 3.12

4.0. Environmental Performance of Sample Firms

The objective of analyzing the determinants of firm performance, was carried out in two dimensions, namely, financial performance and strategic performance. The financial performance was assessed, using secondary data in the Second Chapter. The strategic performance was assessed, from the view point of primary stakeholders, namely, investors and customers by using primary data in Third Chapter. The present Chapter concentrates on the strategic performance, by using secondary data.

The environmental issues are degradation of natural resources, growing trend of population, level of pollution etc. In a normal life, majority of people realize that the poor management of the environment exists in different walks of life **(Stern, 1992).** These dangerous situations cautioned the world, to take appropriate steps, for changing the human behaviour and to ensure socially responsible action. Besides, the Government has been urged to develop the knowledge and awareness on the environment and socially responsible activities among the people. It is to be noted that for these reasons, the corporates started to disclose the ethical basis of their corporate activities, to attract the people, by creating reputation for the companies' product,as environment friendly product and to enhance the investors' confidence **(Cormier and Magnam, 2003).** At present, the firm has to pay penalties and fines, due to the environmental accident and violation of the regulation relating to environment **(Vasanth et al., 2015_c^{A39}).**

Every company plans to increase the profit year by year because the profitability of the firm is considered to be an important index, for the future development of the company and business. Furthermore, it is one of major determinants for the success or failure of the firms. The profit earning attitude of the corporates, creates many problems to the environment, by ignoring sustainability and social responsibility of firm. In the race for earning profit, the environmental resources are devoured around the world. Many studies proved that due to the development of the economy, problems like diminishing natural resources, degradation of environment, increasing levels of pollution etc. keep on increasing constantly **(Wen and Chen, 2008).** It is to be noted that due to increasing use of

energy, the natural resources are gradually exhausted. **Singh et al., (2009)** reported that the industrialization and globalization created enormous amount of changes, which affected the ecological functions. This situation demands the corporates, to take immediate measures, for the optimum utilization of energy, without affecting the profitability of the firm. Hence some researchers urge the corporates to consider the environment, in their internal and external decision making **(Vasanth et al., 2012[A26] ; Vasanth et al., 2015$_b$[A38]).**

The corporates may take appropriate steps, to reduce the cost of production, by ensuring optimum utilization of energy, raw materials, and by reducing the waste. Further, caring about environmental performance, would help the companies to get subsidies from the Government, for implementing green techniques in production. In addition, this study may guide the corporates to use modern plants and machineries, which save energy, generate low CO_2 emission and ensure water conservation, for the better environmental performance. This practice would help the business to achieve sustainable practice and increase the competitive advantage of the firm. The development of the environmental performance of the company, would attract the socially responsible investors, across the Globe, to invest their money and create investment opportunity **(Vasanth et al., 2015$_b$[A38]).** In the light of this background, this study is considered to be significant for the sustainable development of firms.

There is an increasing number of research works on environmental and financial performance. Moreover, the researchers analyzed the relationship between financial and environmental performance. The main aim of firms is to improve the financial performance of the firm, without compromising on environmental protection. The main inputs, for the development and growth of economy, are mainly the utilization of energy resources. In the world of today, the level of CO_2 emission is raised from the uncontrolled utilization of energy. Many studies and reports show that one of the main reasons, for the increasing level of pollution, is industrialization and globalization of the world. To protect the world from emission, it is not possible to avoid the industrialization and economic growth. In this situation, there is need for discharging responsible business, by protecting the environment, from the emission. The profit is an effective tool for measuring the efficiency of the business. One of the

major portions of the countries' GDP, depends on the profitability of the industrial growth of the country. Hence it is important for every company to maintain or to increase the level of profit. Corporates take necessary steps, to prevent the degradation of the global environment, by controlling the level of pollution, without affecting the profitability of the company. In other words, it is essential that when the company earns more profit from the operation of the business, it should spend, a portion of profit, towards environmental protection. In India, the amended Companies Act 2013 also insists that a profitable company should spend sufficient amount towards the Socially Responsible Activity **(Vasanth et al., 2015_c^{A39}).**

The concept of Environmental Performance (EP) is an effective tool, for judging the sustainable consumption of natural resources, by the organization. In the current situation, majority of corporates do adopt the environment management system, for better competiveness of the business. The issues, about the environmental performance, are being reckoned by the corporates while framing the business strategy. The stakeholders of firms do have awareness about the social responsibility of the firm. The corporates are compelled to disclose their environmental performance. The problem is that some of the corporates do not show their willingness, to spend the required amount, for protecting the environment. Such corporates consider that the expenses toward the environmental performance are cost burdens to the firm. But other corporates considered that the amount spent, to protect the environment or to maintain the environmental performance, is good for the company to promote its reputation. As a result, some companies do voluntarily follow, the ethical activities and promote new technology, to optimize the energy consumption. In addition, another major problem is that the low profitable companies do voluntarily involve themselves in ethical activities and concentrate on the optimum consumption of energy but high profitable companies swallow the resources and enjoy more profit. Hence there is need to follow strict regulation, to maintain the contribution by the corporates, towards environment protection. Further, there is need for equilibrium, among the companies, to protect environment and better consumption of resources **(Vasanth, 2015_c^{A39}).** Contrary to this view, the present study on the analysis of the impact of profitability on environmental performance of the firm was carried out.

4.1. Analysis of Environmental Performance

The objective of identifying the determinants of firm performance was carried out, from various angles, as discussed above. The present chapter aims to analyse, whether environmental performance is one of the determinants of firm performance.

As stated earlier, in Chapter-I (Methodology Part),the null hypotheses (**NH–1 to NH–4**) were tested by analyzing the impact of firm's profitability and Environmental Performance. In order to study the impact of firm's Profitability on Environmental Performance of the firms, to find out the existence of EKC (Environmental Kuznets Curve) relationship between Environmental and Financial Performance and to examine the cause and effect relationship between Environmental and Financial Performance of sample firms, all the companies, listed in S&P BSE 500, were selected. The required data were available only for 191 companies. Hence the sample size of companies was limited to 191 companies of S&P BSE 500 index. The required data were collected, from the annual financial statement of sample firms, found in corporate database, for a period of 10 years from 01-04-2004 to 31-03-2014. The list of variables used in respect of environmental performance is given below.

List of Variables Used

Indicators	Sub-Indicators	Abbreviation	Nature of Variable	Sources
Environmental Performance (Energy Intensity Ratio)	Power and Fuel Expenses	EI	Dependent	G.Y.Qi et. al. (2014), Amy Tung et. al. (2014) And Santosh Kumar Sahu & Krishnan Narayanan (2011)
Firms Profitability	Return on Assets	ROA	Independent	Hart and Ahuja (1996), Marcus Wagner.M (2005), Hiroki Iwata and Keisuke Okada (2011), G.Y.Qi et. al. (2014)
	Return on Equity	ROE	Independent	
	Return on Capital Employed	ROCE	Independent	
	Return on Sales	ROS	Independent	

SOURCE:List of Variables adopted in the study **(Vasanth et al., 2015$_c$[A39]).**

If the environmental performance is influenced by the firms profitability variables, it can be concluded that environmental performance is an important determinant of firm performance. The analysis of Environmental performance, as a determinant of firm performance, was divided as follows:

a) Profitability and Environmental Performance (Energy Intensity) of Sample Firms

b) Parameter Estimation for Linear, Quadratic and Cubic models of Financial Performance of Sample Firms, and

c) Granger Causality and Regression coefficient for Environmental Performance (Energy Intensity) and Profitability of Sample Firms

4.1.1. Analysis of Profitability and Environmental Performance (Energy Intensity) of Sample firms

The main objective of this section was, to study the impact of profitability on environmental performance of the sample firm. The results of regression, for the profitability and environmental performance of the sample firms, are summarized in **Table–4.1**.

Table–4.1
Result of Regression for the Profitability and Environmental Performance (Energy Intensity) of sample firms during the study period from 01-04-2005 to 31-03-2014

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROA	0.281479	0.103075	2.730815	0.0064**
ROCE	-0.798308	0.087778	-9.094601	0.0001**
ROE	0.199212	0.085807	2.321635	0.0204**
ROS	0.448612	0.052402	8.561016	0.0001**
C	-1.747488	0.052628	-33.20466	0.0001**
F-statistic			52.91791	
Prob(F-statistic)			0.0001**	
R-squared			0.108791	
Adjusted R-squared			0.106735	
Durbin-Watson stat			1.856011	

Source: **Vasanth et al., (2015$_c$[A39]),** Impact of Firms' Profitability on Environmental Performance: Evidence from Companies in India, Mediterranean Journal of Social Sciences, 6(1),109-119 (Originally compiled from Prowess and computed using E-Views 7.1).

Dependent Variable: Environmental Performance (Energy Intensity)

Note: ROA-Return on Assets ROE–Return on Equity ROCE–Return on Capital Employed, ROS - Return on Sales,

**significant at the 0.01 level

The impact of profitability variables on environmental performance of the firms, was tested by using the regression analysis. From the results of the Table (i.e., the value of t-statistic (2.731) and probability (0.0064)), it is obviously understood that the ROA exercised significant impact on EI (Energy Intensity), during the study period. Also, there was positive impact, with the coefficient value being 0.2815. The values of t – statistic and probability for ROCE were -9.095 and 0.0001 (less than the 1% significance value) respectively, which indicated that ROCE turned out to be significant with EI. But the result of coefficient (-0.7983) exposed the negative impact of ROCE on EI. Likewise, ROA (0.2815), ROE (0.1992) and ROS (0.4486) were also found to have positive impact and significant association with EI. To test the fitness of the model, for all independent variables (jointly), F statistic and R square were used.

It was identified that there was significant influence (F statistics – 52.918 with p value of 0.0001) of all the variables (ROA, ROCE, ROE, and ROS). In other words, there was impact of sample profitability variables on EI. The overall model showed that 10.879% (R square value – 0.10879) variation of EI was measured by this model. The result revealed that all the four independent variables (ROA, ROCE, ROE, and ROS) showed significant result. From this, it is inferred that the model was good, to test the influence of profitability on EI. The result of Durbin – Watson stat also supported this model, with a value of around 2 (1.856). This further confirmed that the model was good and the variables were independently distributed. Hence the Null Hypothesis (NH 4.1), **there is no impact of profitability variables on environmental performance of the firm,** is rejected. In other words, there was impact of profitability variables on the environmental performance of the firm, during the study period. Since the environmental performance was influenced by profitability, the environmental performance was proved to be a determinant of firm performance.

The results (**Table-4.1),**obtained from **Vasanth et al., (2015$_c^{A39}$)**, reportedthe equation, framed to evaluate the Energy Intensity (EI), as

EI = (0.2815) ROA + (-0.7983) ROCE + (0.1992) ROE + (0.4486) ROS + (-1.7475)**.**

4.1.2. Analysis of Parameter Estimation for Linear, Quadratic and Cubic Models of Financial Performance Variables with Environmental Performance Variable of sample firms

Table – 4.2 shows, the results of parameter estimation, for linear, quadratic and cubic function of selected financial performance variables. The results are presented under 3.a, 3.b, 3.c, 3.d, for Model – I (ROA), Model-II (ROE), Model- III (ROCE), Model – IV (ROS) respectively. The result of linear function for Model- I summarises that the coefficient value of ROA was at 0.0161 while the constant value was at 0.026. At the same time, in quadratic function, the values of coefficient were 0.728 and -1.891 for ROA (b1) and ROA- squared (b2) respectively. Further, to identify more possible shapes of relationship, the cubic function of ROA was used. According to the results of cubic function, the values of coefficient were 0.631 for ROA, 0.000 for ROA-squared and -6.711 for ROA-cubed. From the results of the above functions, Model – I explicated an inverted U shaped relationship, between energy intensity and ROA. For Model –II (ROE), the estimated results of linear function indicated the value of regression coefficient,to be 0.141, with the constant value of 0.013. Further, the existence of EKC relationship was tested by using quadratic function. It is observed that the values of coefficient for ROE (b1) and ROE–squared (b2) were -0.610 and 1.328 respectively. Also, the results of cubic function indicated the estimated coefficient values for ROE (b1), ROE-squared (b2), and ROE-cubed (b3), to be 0.000, -1.107, and 3.032 respectively in respect of sample firms. This result identified the U shaped relationship between ROE and energy intensity of the sample firms. The value of coefficient for ROCE (b1) was 0.198, with the constant value of 0.010 in the linear function of Model-III. The results of quadratic function expressed the value of parameter for ROCE (b1) as -0.738 while the value of ROCE – squared (b2) was 2.038. Likewise, the Table summarises the results of cubic function for Model –III. It shows the values of parameters to be 0.000, -1.677, and 5.825, for ROCE (b1), ROCE – squared (b2), and ROCE cubed (b3) respectively, with the constant value at 0.061. This result concluded that there was a U shaped relationship between the ROCE and energy intensity.

Based on the results obtained in the present study, linear function of Model - IV showed the value of regression coefficient, for ROS, to be 0.107, along with the constant value at 0.028. Also, the magnitude of regression coefficient was -0.965 for ROS (b1), and 2.926 for ROS-squared (b2) of quadratic function. In order to estimate the more possible shapes of relationship, the cubic function was used for Model – IV.

Table-4.2

Results of Parameter Estimation for Linear, Quadratic and Cubic Models of Financial Performance

3.A) Model – I (ROA)									
Results	**b1**	**b2**	**b3**	**Constant**	**R Square**	**F Statistics**	**P Value**	**Shape**	**Turning Point value**
Linear	0.161	-	-	0.026	0.276	3.05	0.119	Inverted U shaped relationship	1.1978
Quadratic	0.728	-1.891	-	-0.012	0.289	1.423	0.303		
Cubic	0.631	0	-6.711	-0.015	0.305	1.539	0.119		
3.A) Model – II (ROE)									
Results	**b1**	**b2**	**b3**	**Constant**	**R Square**	**F Statistics**	**P Value**	**Shape**	**Turning Point value**
Linear	0.141	-	-	0.013	0.58	11.069	0.01	Inverted U shaped relationship	1.4059
Quadratic	-0.61	1.328	-	0.111	0.922	41.636	0.001		
Cubic	0	-1.107	3.032	0.062	0.935	50.114	0.001		
3.A) Model – III (ROCE)									
Results	**b1**	**b2**	**b3**	**Constant**	**R Square**	**F Statistics**	**P Value**	**Shape**	**Turning Point value**
Linear	0.198	-	-	0.01	0.696	18.341	0.003	Inverted U shaped relationship	1.3352
Quadratic	-0.738	2.038	-	0.108	0.931	47.14	0.001		
Cubic	0	-1.677	5.825	0.061	0.934	49.883	0.001		
3.A) Model – IV (ROS)									
Results	**b1**	**b2**	**b3**	**Constant**	**R Square**	**F Statistics**	**P Value**	**Shape**	**Turning Point value**
Linear	0.107	-	-	0.028	0.264	2.864	0.129	Inverted U shaped relationship	1.3243
Quadratic	-0.965	2.926	-	0.116	0.672	7.161	0.02		
Cubic	0	-2.816	10.695	0.065	0.749	10.43	0.008		

Source:Vasanth et al., (2015 $^{A37}_{a}$), Testing Environmental Kuznets Curve Hypothesis at Firm Level in India, Journal of Sustainable Development, 8(8), 201-212) (Originally compiled from Prowess and computed using SPSS–20).

The coefficient values for ROS, ROS-squared and ROS-cubed were 0.000, -2.816, and 10.695 respectively. It is evident that the linear and cubic functions did not reveal any shape of relationship, between environmental and financial performance variables. However, the coefficient values of quadratic function revealed a negative sign (b1 < 0) for ROS and a positive sign (b2 > 0) for ROS-squared, in respect of sample firms. In short, there was existence of U shaped relationship, between EI and ROS, in respect of sample firms.

The above discussed results indicated that there was an inverted U shaped (i.e., EKC) relationship between ROA and energy intensity. It explained that the consumption of energy was high during the increasing stage of ROA but after the value of turning point, the energy consumption was controlled. At the same time, the other financial performance variables such as ROE, ROCE, ROS revealed U shaped relationship in respect of sample firms. The U shaped relationship recorded that increase, in the value of ROE, ROCE, and ROS,explained energy consumption until the value of turning point was reached. But after the value of turning point, the ROE, ROCE, and ROS did not support the environmental performance.

In order to estimate the turning point, coefficient value of quadratic function was used. The turning point values, for the above tested models, were estimated by – b1/2b2 and constant value **(Song et al., 2008; Saboori and Sulaiman, 2013)**. Accordingly, the values of turning point, for energy intensity, were 1.1978, 1.4059, 1.3352, and 1.3243, under model I, model II, model III, and model IV respectively. Further, the value of R square revealed the percentage of prediction of dependent variables, by using tested models. The value of F statistics and significance value indicated that the results (quadratic functions) were significant, at 95% confidence level, for Models – II, Model – III, and Model – IV. But the result did not provide significant results, at 95% confidence level, for Model – I. To sum up, the three variables, namely, ROE, ROCE, and ROS manifested U-shaped relationship, with energy intensity of the sample firms. Hence the null hypothesis (NH4.2) that, **there is no environmental Kuznets Curve (EKC) relationship between environmental performance and financial performance** is accepted **(Vasanth et al., 2015_a [A37]).**

The U-shaped relationship revealed the competency of the firm, to effectively and efficiently manage the energy intensity. From the view point of general public, the environmental performance of the firm was assessed against energy intensity and it was proved thatthus environmental performance was a determinant of firm performance.

4.1.3. Analysis of Granger Causality and Regression coefficient for Environmental Performance (Energy Intensity) and Profitability of Sample Firms

The results of granger causality and regression coefficient, for EI and profitability of sample firms, during the study period from April 1, 2005 to March 31, 2014, are exhibited in **Table- 4.3**. It is to be noted that Granger causality analysis was used, to examine the cause and effect of relationship, between the environmental performance and financial performance, while regression coefficient indicated, the level of variation, among the sample variables, considered for this study.

Table- 4.3
Results of Granger Causality and Regression Coefficient for EI and Profitability of Sample Firms

Direction of Causality	Granger Causality			Regression Coefficient
	F statistics	P value	Significance level (%)	
ROA causes EI	2.6499	0.0709	8	0.2815*
EI causes ROA	2.2385	0.1069	10	0.0152*
ROCE causes EI	5.8515	0.0029	1	−0.7983*
EI causes ROCE	3.7731	0.0232	3	−0.057031*
ROE causes EI	0.1646	0.8482	84	0.199212*
EI causes ROE	9.8564	0.001	1	0.015555*
ROS causes EI	1.2742	0.2799	28	0.448612*
EI causes ROS	2.9156	0.0544	6	0.090396*

Source: **Vasanth et al., (2015$_b$[A38])**, Nexus between Profitability and Environmental Performance of Indian Firms: An Analysiswith Granger Causality,International Journal of Energy Economics and Policy, 5(2), 433-439) (Originally compiled from prowess and computed using E-views 7).

Note: *P<0.05 (Significant at 95% confident level). High value of significance denotes the chance for the occurrence is very low.

EI: Energy intensity, ROA: Return on assets, ROE: Return on equity,
ROS: Return on sales, ROCE: Return on capital employed

In order to examine the cause and effect relationship, between environmental and financial performance, the sample variables were classified into eight groups, namely, ROA and EI, EI and ROA, ROCE and EI, EI and ROCE, ROE and EI, EI and ROE, ROS and EI, and EI and ROS. The values of F statistics, for sample variable sets, namely, ROA and EI (2.6499), EI and ROA (2.2385), ROCE and EI (5.8515), EI and ROCE (3.7731), EI and ROE (9.8564), ROS and EI (1.2742), and EI and ROS (2.9156), were recorded at various significance levels, during the study period. From these results, bidirectional relationship between sample profitability variables (ROA, ROCE, ROE, and ROS) and EI of the sample firms, was noticed during the study period. It is to be noted that bidirectional relationship explained the changes in the values of selected profitability variables, with EI. The deviations, in the value of EI, may induce the selected profitability variables to vary in their value. The high p value (significance level), indicated the chances of occurrence (influence of one variable on another variable), to be low.

The result of the **Table-4.3** clearly explains that if other things remain the same, one percent growth of ROA was directly linked to the increase of 0.2815% in EI of sample firms. Likewise, the environmental performance i.e. EI, created positive effect on ROA i.e. 10% increase in EI was related to 0.152% rise in ROA. From the analysis, it is inferred that the increasing value of ROA contributed to the increase in value of EI and vice versa of sample firms, during the study period.

At the same time, ROCE exercised negative influence on EI and this indicated that a change of one unit in ROCE, would lead to decrease in EI, by 0.7983 units. Similarly, EI also recorded the negative value of changes on ROCE i.e. 1% increase in EI would lead to decrease in ROCE by 0.057%. In other words, the variables set, namely, ROCE and EI witnessed bidirectional relationship, with inverse effect.

Table-4.3 clearly indicates that there was cause and effect relationship between ROE and EI. There was variation of 0.199% in EI while there was one

percent change in ROE, during the study period. Likewise, during the study period, one percent rise in EI was linked with 1.56% increase in ROE. Hence the existence of direct link between EI and ROE.

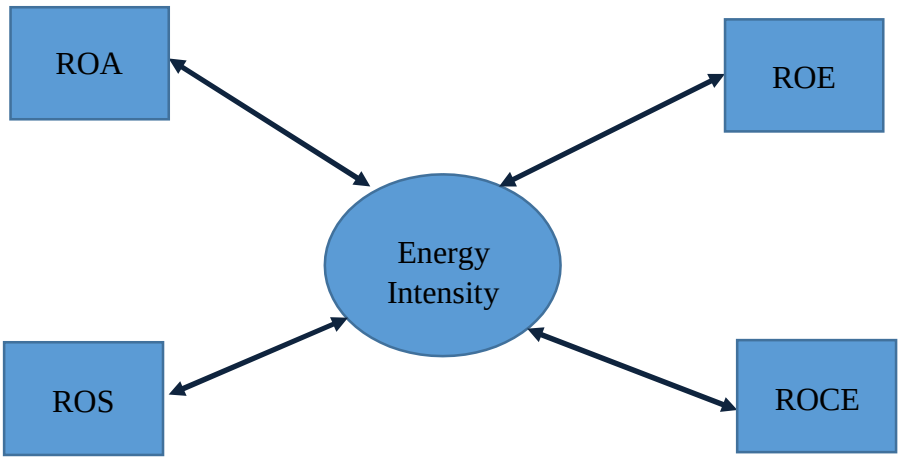
The overall results of regression coefficient indicated that one unit of change in ROS raised EI, by 0.449 unit, in respect of sample firms. In other words, the ROS was the reason for changes in EI. From the analysis, as given in the **Table-4.3**, it is inferred that there was a cause and effect relationship, among EI and ROS. In other words, 10% rise in EI was the reason for 0.9% increase in ROS of sample firms. Hence the null hypothesis (NH4.3) - **There is no cause and effect relationship between the profitability and environmental performance of the firm,**is rejected **(Vasanth, 2015$_b$[A38]).**

The cause and effect relationship revealed the possibility of increasing profitability through increasing energy intensity and hence the environmental performance was a determinant of firm performance.

The relationship between profitability variables and environmental performance (EI) of sample firms, during the study period, is displayed in **Figure 4.1.** The double headed arrows were used, to indicate the bidirectional relationship between the variables while single headed arrows indicate unidirectional relationship, between the financial and environmental performance variables.

According to **Figure 4.1**, all the four profitability variables, namely, ROA, ROE, ROCE, and ROS experienced bidirectional relationship with EI (proxy variable of environmental performance) of sample firms of BSE 500, during the study period. In other words, by controlling the level of EI, the profitability position of the sample companies could be increased. In short, the level of environmental performance could be promoted, by controlling the unreasonable profits of the firm **(Vasanth et al, 2015$_b$[A38]). Table 4.4** shows details about testing of hypotheses relating to environmental performance of the firms.

Figure - 4.1
Model showing the direction of relationship among selected Profitability Variables and Energy Intensity



Source: Framed from **Table-4.3. Vasanth et al., (2015 b [A38])**, Nexus between Profitability andEnvironmental Performance of Indian Firms: An Analysis with Granger Causality,International Journal of Energy Economics and Policy, 5(2), 433-439.

Note: ⟷ Indicates bidirectional relationship

Table - 4.4 : Testing of Hypothesis relating to Environmental Performance of Firms

Hypothesis		Remarks
NH 4.1	There is no impact of profitability variables on environmental performance of the firm	Rejected
NH 4.2	There is no Environmental Kuznets Curve (EKC) relationship between environmental performance and financial performance	Accepted
NH 4.3	There is no cause and effect relationship between the profitability and environmental performance of the firm	Rejected

4.2. Sum-up on the Environmental Performance of Sample Firms

Since two hypotheses, namely,**NH-4.1** and **NH-4.3** are rejected, it could be inferred that environmental performance was a significant determinant of firm performance. However, the acceptance of **NH-4.2**indicated that higher the profitability, higher the energy consumption.But beyond a certain point, higher the profitability,lesser the energy consumption. In other words, explains that the environmental performance was a significant determinant of firm performance.

Therefore, Indian firms, policymakers, practitioners, etc., should focus on appropriate measures, to fulfill environmental obligations and improve the environmental performance, which would promote the overall performance of the firm in the long run **(Vasanth, 2015_b[A38])**. It is also suggested to formulate appropriate policies, to control environmental degradation, by corporates and to increase the contribution towards the environmental protection activities **(Vasanth et al., 2015_a[A37])**.

5.0. Summary of Findings, Suggestions and Conclusion

5.1. Findings of the Study

The present study developed a comprehensive model, for identifying the determinants of firm performance and testing the relevance of select determinants on firm performance. The significant findings of the study are briefly summarized below.

A) Determinants of Firm Performance

- The strategic management can be seen as a systematic process, which aims at maximizing the utilization of available resources, in relation to organizational objectives which are in conformity with the demands of the changing business environment.
- The firm performance is one of the most relevant constructs but lacks clear conceptualistion in the field of strategic management.
- The identification of relevant factors/dimensions, in respect of firm's performance, is the underlying research issue. Besides, there is a wide gap, between academic researchers and practitioners, in respect of using a model, to measure the performance of the firm, with high degree of accuracy.
- This study suggests a comprehensive subjective model, after carefully reviewing the articles published in reputed academic professional and referred journals and subject knowledge of the researchers.
- To identify the potential indicators, for each presumed performance aspect, a particular variable was considered as relevant, if the same variable was used for the analysis by other researchers and the results, using such a variable, were published in more than two articles in top journals.
- A comprehensive construct model, on firm's performance, can be unidimensional or multidimensional.
- The determinants of a construct on firm's performance, identified from previous research studies, were profitability performance, growth performance, market value performance, customers' satisfaction, employees satisfaction, environmental performance, environmental audit performance, corporate governance performance and social performance.

- Three aspects, viz, profitability performance, growth performance and market value performance were considered complementary to each other. Profitability, growth and market value, measure the ability of firms in the past, to generate returns.

B) Market Value Performance of Firms (Weak Form Efficiency, Semi-Strong Form Efficiency, and Calendar Anomalies)

- The creation of value in the stock market, on par with their competitors, is the key concern of a firm.
- The market value performance of firms was studied by analyzing the performance of firm, with respect to their stock, confirming the assumptions of Efficient Market Hypothesis or deviating from the assumptions of Efficient Market Hypothesis i.e., Calendar Anomalies. The market value performance of firms was analysed by assessing the stationarity, randomness, weak form efficiency and volatility of sample indices.
- The index movement is an important barometer of market value performance of a company. The favourable market performance is useful for a company, seeking additional equity financing. The performance of the firm is reflected in the performance of index, more particularly in the performance of sectoral indices.
- The analysis of AAR further confirms the fact that performance of firms, followed by different announcements, is confirmed by index movement.
- This study considered six sample indices, namely, BSE Automobile, BSE Bankex, BSE Health Care, BSE Information Technology, BSE Metal and BSE Power. As per the analysis of the study, three sample indices, namely, BSE Auto, BSE Healthcare, and BSE IT did not record weak form efficiency and their volatility, through randomness, was observed. The market value performance of the firms, belonging to these three sectors, recorded moderate changes. At the same time, the market value of the firms, pertaining to Power Sector, recorded significant volatility.
- There are different events like Mergers & Acquisitions, Quarterly Earnings, Dividend Issue, Bonus Issue, Stock Split, Buyback of Share, etc. which have impact over the prices of securities in the capital market.

- According to the analysis of the study, the sample event announcements like dividend, quarterly earnings, new listings, M&A and rights issues, had no significant impact on the market value of firms.
- Financial market anomalies are cross-sectional and time series patterns in security returns, are not predicted by a central paradigm or theory. Stock market volatility responds differently to the arrival of positive and negative news in the market.
- The different patterns, identified in stock returns, included the January Effect, day of the week effect, and different monthly effects (Turn of the month effect, Semi month effect, the end of the month effect etc).
- The analysis of this study found that using calendar anomalies, no significant change was observed in the market value performance.

C) Stakeholders' Satisfaction on the Performance of Firms (Investors Sentiments, Customer Service Loyalty, and Service Efficiency)

- Financial evaluation systems generally focus on annual or short-term performance against accounting yardsticks. They do not deal with progress, relative to customer requirements or competitors, or other non-financial objectives, that may be important in achieving profitability, competitive strength and longer-term strategic goals.
- The investor sentiment (in respect of Investors' Optimism, Investors' Participation and Investors' Stock Market Outlook) was tested, in relation to stock specific factors, as these factors reflect the performance of firms better in the mind of investors.
- The stock specific factors included Price Earnings Ratio and Familiarity with the Products and Services, Financial Characteristics, Psychological Factors, Quality of Management, Expected Events surrounding the Stock and the Book Value, Recommendation of the Financial Community, Recommendation of the Financial Community, 'Who Else is Buying?', and Past Price Performance and Sector Attractiveness.
- The overall results, relating to investor sentiments, revealed that the stock specific factors did have greater influence on investors' optimism and investors'

stock market outlook and exercised lesser influence on investor participation. In short, investors sentiment was the reflection of firm performance.

- Customer satisfaction is the most universally accepted measurement. Customer satisfaction improves the ability of firm to predict future cash flows, stock performance, long-term financial measure, and shareholders' value. Most companies do attempt to attract the customers and to make them satisfied with the companies' products or services, in order to increase customer service loyalty.
- In respect of customer service loyalty, ten sub (micro) dimensions included the dimensions of Behavioral, Attitudinal, Cognative, Conative, Affective, Trust, Commitment, Word of mouth, Complaining behavior and Price tolerance. The results of this study confirmed that customer service loyalty was a determinant of firm performance and it was influenced by these ten pertinent factors, driving customers towards repeated purchase.
- The service efficiency of PTC, from the point of view of passengers, was determined by various factors such as speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, bus fare and safe travel. The analysis revealed the fact that service efficiency of firms was the important determinant of firm performance.

D) Environmental Performance

- The profitability of the firm is considered to be an important index for the future development of the company and business. The main aim of firms is to improve the financial performance of the firm, without compromising on environmental protection.
- Corporates take necessary steps, to prevent the degradation of the global environment, by controlling the level of pollution, without affecting the profitability of the company.
- The concept of Environmental Performance (EP) is an effective tool, for judging the sustainable consumption of natural resources by the organization.
- Environmental Performance was tested, by using Energy Intensity Ratio (Power and Fuel Expenses) while the Firm Profitability was tested through three

ratios,namely, Return on Assets, Return on Equity, Return on Capital Employed, and Return on Sales.

- According to the results of this study, the environmental performance was influenced by profitability. Environmental performance was proved to be a determinant of firm performance.
- The analysis of cause and effect relationship revealed the possibility of increasing profitability, through increasing energy intensity and hence the environmental performance was a determinant of firm performance.
- It is found that higher the profitability, higher the energy consumption, but beyond a certain point, higher the profitability, lesser the energy consumption.

5.2. Suggestions of the Study

The following are some of the important suggestions, offered in the light of the findings of the study, after consultations with the experts in the field of firm performance, stock market operations and researchers in business studies. The valuable information and feedback, helped the Researcher, to fine tune the suggestions of the present study.

- The field of strategic management needs a clearer conceptualization of firm performance measure, periodical discussions on its dimensions and better measurement.
- Performance measurement systems, integrating with multi dimensions, play a key role in developing strategies, evaluating the achievement of organizational objectives and compensating the managers and other stakeholders.
- The measurement system of companies should stress more financial measures (such as earnings and accounting returns) as well as the drivers of value (such as customer and employee satisfaction, innovation and quality).
- Academic researchers should suggest a comprehensive subjective model, covering all relevant determinants, to measure the performance of the firms, with accuracy, after carefully reviewing earlier research articles, published in academic journals and views of business executives/officials.

- The development of financial markets created significant impact on economic growth. The regulators and policy makers should pay attention to the market efficiency of Indian stock market. Improved policies may assist in deepening the financial markets and further improving the market efficiency in future, for helping the retail investors and other stakeholders **(Ramkumar and Selvam, 2014[B8]).**
- Investors need to understand the efficiency of the stock market indices, to invest their hard earned money, in a profitable way while policy makers need to use the latest information, about the performance of different indices, to devise appropriate policies **(Ramkumar et al., 2015[A40])** and to attract retail investors and promote the economy of the country.
- The analysis of sectoral indexing is one way of measuring the economic growth. It quantifies the key parameters of economic growth. The analysis of different indices facilitates the Government and investors, to use it as the reference guide **(Ramkumar et al., 2012[A27]).** Hence the analysis of sectoral indices should be made, on a periodical basis, for the benefits of investors and Government.
- According to the analysis, the event announcements (quarterly earnings, dividend, new listings, mergers and acquisitions, rights issue, bonus issue, buyback and stock split) by firms, triggered significant reaction in the security prices of sample companies, during the post announcement period. Hence, investors are advised that whenever the companies come up with event announcements, the investors can closely watch the information content of the event (good or bad) and accordingly, they have to take the investment decision (buy or sell) **(Selvam, 2012$_b$[B4]).**
- The firms must release true and reliable information, to promote market discipline, whenever the Indian companies come up with event announcements **(Selvam,2012$_b$[B4]).** This will ensure reasonable benefits to retail investors. Besides, firms need to study the market reaction, to the information of events, so as to maintain the value of the firms.

- The regular identification of seasonal patterns in stock markets, may help the investors to form appropriate trading strategies in the stock market **(Nageswari and Selvam,2012[B5]).** This would also help the firms to maintain the value of a firm. Hence, investors should note that the periodic assessment of trend in stock markets, could help the investors to identify appropriate trading strategies, for better investment **(Ramkumar and Selvam, 2014[B8]).**
- The active trading strategies, based on the knowledge of market anomalies, would provide benefits to the investors. It is necessary to periodically find out whether different anomalies exist in the stock market **(Nageswari et al., 2011$_b$[A18]; Nageswari and Selvam, 2012$_a$[A24]; Nageswari and Selvam, 2012$_b$[A25]).**
- The analysis of investor sentiments revealed that the stock specific factors did have greater influence on investors' optimism and investors' stock market outlook but they exercised lesser influence on investor participation. It is confirmed that the investors sentiment was one of the determinants of firm performance, by stock specific factors. Hence the officials of a firm need to focus on investors sentiments so as to promote firm performance.
- It is to be noted that firms can increasingly generate more customer loyalty by partnering with customers **(Sudhahar and Selvam, 2008[B1]).** The firms need to devise strategies, to promote customer service loyalty, by way of introducing experiential and intangible rewards, which will help the firms in the long run.
- It is found that customer satisfaction influenced a firm's value and profitability. Hence companies need to attract the customers and to provide them maximum satisfaction, with new and value added products or services, in order to increase customer service loyalty.
- Customer value has been recognized as one of the principal drivers of customer satisfaction. Hence, service organizations need to make major focus on the key determinants of repurchase and ultimately for the promotion of customer retention and loyalty **(Israel et al., 2004[A1]).**

- Service quality directly influenced customer loyalty and indirectly, through satisfaction. The customer's continued usage of service depended upon service efficiency of the firm. Henceservice efficiency should be considered as an important determinant of firm performance, as the firms cannot survive, without satisfying their customers through better service.
- Effective transportation, especially bus transportation, solves the problems of basic needs such as housing, slum, employment and scarcity of goods. Hence, the effective public bus transport system should be developed **(Selvam, 2016$_a^{B12}$).**
- The service efficiency of PTC, from the point of view of passengers, was determined by various factors such as speed, frequency, punctuality, comfort and convenience, behaviour of bus crew, bus fare and safe travel. The analysis of these factors revealed that corporate firm should immediately attend to factors like safe travel, which would promote satisfaction to the passengers **(Selvam, 2016$_a^{B12}$).** In order to ensure safe travel in the buses, bad condition of buses, misbehavior of passengers and public and violation of traffic rules by public and crew, should be taken care of.
- The profit earning attitude of the corporates, creates many problems to the environment, by ignoring sustainability and social responsibility of firms. Hence corporates should adopt the environment management system, for better competiveness of the business. Besides, companies should voluntarily follow the ethical activities and promote new technology to optimize the energy consumption.
- The firms may take appropriate steps, to reduce the cost of production, by ensuring optimum utilization of energy, raw materials, and by reducing the waste. More particularly, caring about environmental performance, would help the companies, to get subsidies from the Government, for implementing green techniques in production.
- Firms should take necessary steps, to prevent the degradation of the global environment, by controlling the level of pollution, without affecting the profitability of the company. It is essential that when the company

earnedmore profit from the operation of the business, it should spend a portion of amount towards environmental protection.

- Indian firms, policymakers, practitioners, etc., should focus on appropriate measures, to fulfill environmental obligations so as to improve the environmental performances, which would promote the overall performance of the firm in the long run **(Vasanth.,2015$_b^{A38}$)**.

5.3. Conclusion

The identification of comprehensive subject model is important, to measure the firm performance. Efforts were made, for doing advanced academic research so as to bridge the gap between academics and practice on formulating a model. The model clearly identified nine dimensions namely, profitability performance, growth performance, market value performance, employee satisfaction, customers' satisfaction, environmental performance, environmental audit performance, corporate governance performance and social performance. But based on the publications of the Researcher, an attempt has been made in this study, to cover only three components, viz, market value performance, stakeholders, satisfaction and environmental performance. The analysis of market value performance of firms, by way of testing conformity and deviations from EMH, indicated that among six sample indices (BSE Automobile, BSE Bankex, BSE Health Care, BSE Information Technology, BSE Metal and BSE Power), only two indices, viz, BSE Bankex and BSE Metal reported significant change in the market value performance. The examination of deviations, from EMH, using calendar anomalies (Day of the Week Effect, Month Effect, Semi Month and Turn of the Month Effect, and Holiday Effect) revealed that there was no remarkable change in the market value performance due to market anomalies. Similarly, the analysis of sample events (Quarterly earnings, Dividend, New listings, Mergers and Acquisitions, Rights issue, Bonus issue, Buyback, and Stock split) indicated that there was no significant change in the market value performance of firms, in respect of sample events. Upon the analysis of firm performance, it is found that investors' sentiment,in respect of

investors' optimism, investors' stock market outlook and investors participation is important determinant. The analyses of customer service loyalty apparently shows that there are tenpertinent factors (such as Behavioural, Attitudinal, Cognative, Conative, Affective, Trust, Commitment, Word of Mouth, Complaining Behaviour and Price Tolerance) that actually drovecustomers towards repeated purchase. In other words,customer service loyalty influenced the firm performance. Service efficiency of public transportation was considered as an important determinant of firm performance. Finally, the analysis of environmental performance revealed that environmental performance was a significant determinant of firm.

5.4. Scope for Further Research

The present study creates a platform, for further research, in respect of the following:

- The model, developed in the present study, can be extended to other countries, with appropriate changes.
- Similar study could be conducted, by extending coverage of Journal / Papers / Research Studies, at different study periods.
- A comparative study could be made, on all the determinants of firm's performance.
- The confirmation factor analysis may be used to test the fitness of the Subjective Model.
- Periodical research/review could be made, to identify the appropriate indicators, for each dimension of firm performance, to keep pace with the changing business environment.

6.1. REFERENCES

Agle, B. R., Mitchell, R. K., and Sonnenfeld, J. A. (1999). Who Matter To CEOs? An Investigation of Stakeholder Attributes and Salience Corporate Performance, and CEO Values. *Academy of Management Journal*, 42(5), 507-525. http://dx.doi.org/10.2307/256973

Aksoy, L., Cooil, B., Groening, C., Keiningham, T. L., and Yalcin, A. (2008). The Long-Term Stock Market Valuation of Customer Satisfaction. *Journal of Marketing*, 72(4), 105-122.

Anderson, R. C., and Reeb, D. M. (2004). Board Composition: Balancing Family Influence in SandP 500 Firms. *Administrative science quarterly*, 49(2), 209-237.

Ang, L., and Buttle, F. (2006). Customer Retention Management Processes: A Quantitative Study. *European journal of marketing*, 40(1/2), 83-99.

Baker, M., and Wurgler, J.(2000). The Equity Share in New Issues and Aggregate Stock Returns, *NYU Working Paper No. 2451/31362; NYU Working Paper No. FIN-11-029.*

Barney, J., and Clark, D. N. (2007). Resource-Based Theory. New York: Oxford

Bennet, E. (2012). Sentiments of Indian Equity Investors. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Boyd, B. K., Gove, S., and Hitt, M. A. (2005). Construct Measurement In Strategic Management Research: Illusion or Reality? *Strategic Management Journal*, 26(3), 239-257. doi:10.1002/smj.444

Buttle, F. (2009). Customer Relationship Management: Concepts and Technologies. *Routledge*.

Chakravarthy,B.S.(1986). MeasuringStrategicPerformance. *StrategicManagementJournal*, 7(5), 437-458.http://dx.doi.org/10.1002/smj.4250070505

Cho, H., and Pucik, V. (2005). Relationship between Innovativeness, Quality, Growth, Profitability, and Market Value. *Strategic Management Journal*, 26(6), 555-575. http://dx.doi.org/10.1002/smj.461

Combs, J. G., Crook, T. R., and Shook, C. L. (2005). The Dimension of Organizational Performance and its Implications for Strategic Management Research In: *Research Methodology in Strategy and Management,* D. J. Ketchen and D. D. Bergh (Eds.), (259-286). San Diego: Elsevier.

Cormier,D. and Magnam, M. 2003. Does Disclosure Matter? *CA magazine.* May: 43-50

Crook, T. R., Ketchen, D. J., Jr., Combs, J. G., and Todd, S. J. (2008). Strategic Resources and Performance: A Meta-Analysis. *Strategic Management Journal*, 29(11), 1141-1154. http://dx.doi.org/10.1002/smj.703

Eden, C., and Ackermann, F. (1998). Making Strategy: The Journey of Strategic Management. *Sage*, London

Fama, E.F. (1970). Efficient Capital Markets : A review of theory and empirical work. *The journal of finance,* 25(2), 383-417.

Fornell, C., Johnston, M. D. Anderson, E., Cha, J., and Bryant, B. E. (1996). The American Customer Satisfaction Index: Nature, Purpose, and Findings. *Journal of Marketing*, 60 (October), 7-18.

Fornell, C., Mithas, S., Morgeson III, F. V., and Krishnan, M. S. (2006). Customer Satisfaction and Stock Prices: High Returns, Low Risk. *Journal of marketing*, 70(1), 3-14.

Furrer, O.,Maria Tereza Alexandre, D. and Sudharshan (2007), The Impact of Resource-Strategy Correspondence on Marketing Performance—Financial Performance Tradeoffs, *Journal of Strategic* Marketing, 15, 161–183.

Gede Mahatma Yuda Bakti, I., and Sumaedi, S. (2013). An Analysis of Library Customer Loyalty: The Role of Service Quality and Customer Satisfaction, a Case Study in Indonesia. *Library Management*, 34(6/7), 397-414.

George S. Day and Liam Fahey (1988), Valuing Market Strategies, *Journal of Marketing*, 52(3), 45 – 57.

Glick, W. H., Washburn, N. T., and Miller, C. C. (2005). The Myth of Firm Performance. *Proceedings of the Annual Meeting of American Academy of Management.* Honolulu Hawaii. 25(6), 718-739.

Gregory W. Brown and Michael T. Cliff (2004) Investor Sentiment and the Near-Term Stock Market, *Journal of Empirical Finance*, 11 (1), 1-27

Guilford, J. P. (1954). Psychometric Methods.*McGraw-Hill,*New York.

Gupta, S., and Zeithaml, V. (2006). Customer Metrics and Their Impact on Financial Performance.Institutional Ownership Types on Corporate Social Performance. *Academy of Management Journal,* 42 (5), pp. 564-576.

Hart, S. L., and Banbury, C. (1994). How Strategy-Making Processes Can Make a Difference. *Strategic Management Journal,* 15(4), 251-269. http://dx.doi.org/10.1002/smj.4250150402

Harter, J. K., Schmidt, F. L., and Hayes, T. (2002). Business-Unit-Level Relationship between Employee Satisfactions: A Meta-Analysis. *Journal of Applied Psychology,* 87(2), 268-279. http://dx.doi.org/10.1037//0021-9010.87.2.268

Heracleous, L., and DeVoge, S. (1998). Bridging the Gap of Relevance: Strategic Management and Organisational Development, *Long Range Planning,* 31(5), 742-754.

Ittner, C. D., and Larcker, D. F. (1998). Are Nonfinancial Measures Leading Indicators of Financial Performance? An Analysis of Customer Satisfaction. *Journal of Accounting Research,* 36, 1-35.

Ittner, C. D., Larcker, D. F., and Meyer, M. W. (2003). Subjectivity and the Weighting of Performance Measures: Evidence from a Balanced Scorecard. *The Accounting Review,* 78(3), 725-758.1

Johnson, R. A. and Greening, D. W. (1999). The effects of Corporate Governance andInstitutional Ownership Types on Corporate Social Performance. *Academy of Management Journal,* 42 (5), pp. 564-576.

Kaplan, R. S., and Norton, D. P. (1996). The Balanced Scorecard: Translating Strategy into Action. *Harvard Business Press*.

Karpagam, V., and Selvam, M. (2014). Impact of Corporate Governance Practices and Firm Performance: An Empirical Study. *Indian Journal of Finance,* 8 (12), 34 – 45.

Kenneth L. Fisher and Statman, M. (2000). Investor Sentiment and Stock Returns, *Financial Analysts,* 56 (2) 16–23

Ketokivi, M. A., and Schroeder, R. G. (2004). Perceptual Measures of Performance: Fact or Fiction? *Journal of Operations Management,* 22(3), 247-264. http://dx.doi.org/10.1016/j.jom.2002.07.001

Kumar, A., and Lee, C.M.C. (2006), Retail Investor Sentiment and Return Co-movements, *The* Journal *of Finance,* 61 (5), 2451 – 2486.

Kuznets, P. (1955). Economic growth and income inequality. *American Economic Review*, 45, 1-28.

Morgan, N. A., and Rego, L. L. (2006). The Value of Different Customer Satisfaction and Loyalty Metrics in Predicting Business Performance.*Marketing Science, 25*(5), 426-439

Nageswari, P. (2011). Calendar Anomalies in the Indian Stock Market. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Oli, S. M. (2013). An Analysis of Corporate Governance and the Determinants of Dividend policies of Information Technology Companies in India. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (M.Phil Dissertation).

Pekar, P. J., and Abraham, S. (1995). Is Strategic Management Living Up to Its Promise? *Long Range Planning,* 28(5), 32-44. http://dx.doi.org/10.1016/0024-6301(95)00036-I

Raja, M. (2009). Testing the Efficiency of Indian Stock Market with respect to Information Content of Corporate Event Announcements- A study on Information Technology Companies. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Ramkumar, R. R. (2013). Efficiency of Sectoral Indices – A study with special reference to Bombay Stock Exchange Limited. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Ray, G., Barney, J. B., and Muhanna, W. A. (2004). Capabilities, Business Processes, and Competitive Advantage: Choosing the Dependent Variable in Empirical Tests of the Resource-Based View. *Strategic Management Journal*, 25(1), 23-37. http://dx.doi.org/10.1002/smj.366

Richard, P. J., Devinney, T. M., Yip, G. S., and Johnson, G. (2009). Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management*, 35(3), 718-804. http://dx.doi.org/10.1177/0149206308330560

Rumelt, R. P., Schendel, D. E., and Teece, D. J. (1994). Fundamental Issues in Strategy. *Boston: Harvard Business School Press.*

Rust, R. T., Ambler, T., Carpenter, G. S., Kumar, V., and Srivastava, R. K. (2004). Measuring Marketing Productivity: Current Knowledge and Future Directions. *Journal of marketing*, 68(4), 76-89

Ryals, L. J., and Knox, S. (2005). Measuring Risk-Adjusted Customer Lifetime Value and Its Impact on Relationship Marketing Strategies and Shareholder Value. *European Journal of Marketing*, 39(5/6), 456-472.

Saboori, B., and Sulaiman, J. (2013). Environmental Degradation, Economic Growth and Energy Consumption: *Evidence of the environmental Kuznets curve in Malaysia*. Energy Policy, 60, 892–905.

Selvam, M.(1992). Service Efficiency of Pallavan Transport Coporation Limited in Madras City. Department of Commerce, Annamalai University, Chidambaram, India (Ph.D Dissertation).

Shelby D. Hunt and Robert M. Morgan (1995). The Comparative Advantage Theory of Competition, Journal *of Marketing*,59, 1-15.

Shiller, R.J. (2003), From Efficient Markets Theory to Behavioural Finance, *Cowels Foundation*, Paper No. 1055.

Shleifer, A. and Vishny, R., W. (1997). A Survey of Corporate Governance. *The Journal of Finance*, 52(2), 737-783. http://dx.doi.org/10.1111/j.1540-6261.1997.tb04820.x

Singh, S., Jain, P., and Kumar, P. (2009). Impact of Industrialization on Environmental Pollution. *Indian Forester*, 135(9), 1259-1270. Available from: http://www.indianforester.co.in/index.php/ indianforester/article/view/481

Song, T., Zheng, T. G., and Tong, L. J. (2008). An Empirical Test of the Environmental Kuznets Curve in China: a Panel Cointegration Approach. 19, 381–392. http://dx.doi.org/10.1016/j.chieco.2007.10.001

Stern, P. C. (1992). Psychological Dimensions of Global Environmental Change. *Annual Review of Psychology*, 43, 269-302. http://dx.doi.org/10.1146/annurev.ps.43.020192.001413

Sudhahar, C. J. (2008). Service Loyalty in Indian Retail Banking Services with Special Reference to Housing Finance. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Tsay, T.Y., and Goo, Y.J. (2006). The Relationship of Profitability and Growth with Stock Market Returns in the Electronics Industry. *International Journal of Management*, 23(4), 763 -774.

Vanitha, S., and Selvam, M. (2012). The Effect of Mergers and Acquisitions on Share Holders' Wealth – An Empirical Analysis. *International Journal of Research in Commerce, Economics and Management*, 2(2), 59 – 69.

Vasanth, V. (2016). Environmental and Operational Performance Indian Firms using Environmental Kuznets Curve. Department of Commerce and Financial Studies, Bharathidasan University,Tiruchirappalli, India (Ph.D Dissertation).

Venkatraman, N., and Ramanujam, V. (1986). Measurement of Business Performance in Strategy Research: A Comparison of Approaches. *Academy of Management Review*, 1(4), 801-814. http://dx.doi.org/10.2307/258398.

Waddock, S. A., and Graves, S. B. (1997$_a$). Quality of Management and Quality of Stakeholder Relations. *Business and Society*, 36(3), 250-279.

Waddock, S. A., and Graves, S. B. (1997$_b$). The Corporate Social Performance-Financial Performance Link. *Strategic Management Journal*, 18(4), 303-319.

Wen, Z., and Chen, J. (2008). A Cost-Benefit Analysis for the Economic Growth in China. *Ecological Economics*, 65, 356-366.

Whetten, D. A. (1987). Organizational Growth and Decline Process. *Annual Review of Sociology*, 13(1), 335-358. http://dx.doi.org/10.1146/annurev.so.13.080187.002003

Yermack, D. (1996). Higher Market Valuation of Companies with a Small Board of Directors. *Journal of Financial Economics*, 40(2), 185-211.